

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 14,9 d  
 Edition : 13.05.87  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 402 048 702

Injection pump  
 Pump designation : PES8P120A320RS3146  
 EP type number : 0 412 028 702  
 Governor  
 Governor design. : RQ275/950PA753  
 Governer no. : 0 421 801 282

Customer-spec. information  
 Customer : RVI

Engine : MIVR083530

1st version kW : 294.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 4- 2- 7- 3-  
 6- 5

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 20.8...21.0

100 s: (20.5...21.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 7.9...8.1

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 950

Rack travel in mm : 16.60...18.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 700

Del.quantity : 208.0...210.0

1000 : (205.0...213.0)

Spread cm³ : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 950

Rack travel in mm : 17.4

Testing:

1st rack travel in: 10.50

Speed rpm : 1000...1015

2nd rack travel in: 4.50  
Speed rpm : 1070...1100  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 8.0

Testing:  
Speed rpm : 200  
Minimum rack trave: 6.70  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 330...370

TORQUE CONTROL  
Dimension a mm : 0.58  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 950  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 675  
Rack travel in m: 12.40...12.60  
4th speed rpm : 810  
Rack travel in m: 11.70...12.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 500  
  
1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 360  
Rack travel in m: 12.70...12.80  
3rd pressure hPa : 140  
Rack travel in m: 10.30...10.70

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 190.0...194.0  
1000 s: (187.0...197.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (156.0...184.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Start-of-delivery mark 11.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SSC 13,7 a  
 Edition : 30.05.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 048 706

Injection pump  
 Pump designation : PES8P120A520/4RS3211  
 EP type number : 0 412 028 706  
 Governor  
 Governor design. : RQV300...1250PA639-1  
 Governor no. : 0 421 813 458

## Customer-spec. information

Customer : SSCM

Engine : UD 18-V18

1st version kW : 394.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 2- 6- 3- 4- 5-  
 7- 8

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.30...13.40

Del.quantity cm<sup>3</sup>/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 8.1...8.3

Del.quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.30...1.50

2nd speed rpm : 1000  
 travel mm : 5.70...6.00

3rd speed rpm : 1250  
 travel mm : 7.80...8.00

### GUIDE SLEEVE POSITION

Speed rpm : 1305  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1250  
 Del.quantity 1000 : 199.0...201.0  
 1000 : (196.0...204.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 59...67

Testing:

1st rack travel in: 12.30  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1415...1445  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack trave: 9.70  
Speed rpm : 300  
Rack travel in mm : 8.10...8.30  
Rack travel in mm : 2.00

CONSTANT REGULATION

Speed rpm : 350...460

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 1290...1300

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks:

:

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9\_4 a13

Edition : 24.8.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 058 038

## Injection pump

Pump designation : PES8P100A921/5RS286

EP type number : 0 412 008 025

## Governor

Governor design. : RQV300...1300PA308KR

Governor no. : 0 421 815 102

## Customer-spec. information

Customer : IHC

Engine : DVT 800

1st version kW : 257.6

Rated speed : 2600

## TEST BENCH REQUIREMENTS

### Test oil

inlet temp. °C : 38...42

### Overflow valve

: 1 417 413 040

Inlet press., bar : 2.80

### Test nozzle holder

assembly : 1 688 901 004

### Opening

pressure, bar : 207...210

### Orifice plate

diameter mm : 0,6

Test lines : 9 681 230 713

### Outside diameter

x Wall thickness

x Length mm : 6,35x2,00x1016

### (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.70...2.80  
                  : (2.65...2.85)  
     Rack travel in mm : 10.50  
     Firing order : 1-8-4-2-7-3-6-5

Phasing : 0-45-90-135-180-225-  
           270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.15...12.25

Del.quantity cm<sup>3</sup>/ : 13.8...14.0

100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (-)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.10

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (-)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1300

Aneroid pressure h: 800

Del.quantity : 138.0...140.0

1000 : (-)

Spread cm<sup>3</sup> : 4.0

1000 : (-)

## RATED SPEED

### 1st version

Control lever

position degrees: 62...70

### Testing:

1st rack travel in: 11.20

Speed rpm : 1340...1350

2nd rack travel in: 3.65

Speed rpm : 1505...1535

4th rack travel in: 1640

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

Speed rpm : 100  
Minimum rack trave: 7.00  
Speed rpm : 300  
Rack travel in mm : 4.10...6.20  
Rack travel in mm : 1.45  
Speed rpm : 490...510  
Speed rpm : 580  
Maximum rack trave: 1.10

TORQUE CONTROL

Dimension a mm : 1300  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 900  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 700  
Rack travel in m: 11.20...11.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 800  
Pressure hPa : 160  
Rack travel mm : 8.40...8.50

Measurement

Speed 1/min : 800

1st pressure hPa : 613  
Rack travel in m: 11.70...11.80

START CUT-OUT

Speed 1/min : 170...230

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 132.0...138.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 89.0...97.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 1340...1360

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 188.0...228.0  
1000 s: (-)  
Rack travel in mm : 21.00

Remarks:

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9\_4 a12  
 Edition : 24.8.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 058 039

Injection pump  
 Pump designation : PES8P100A921/5RS286  
 EP type number : 0 412 008 025  
 Governor  
 Governor design. : RQV300...1300PA309KR  
 Governor no. : 0 421 815 101

## Customer-spec. information

Customer : IHC

Engine : DVT 800

1st version kW : 245  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 040

Inlet press., bar : 2.80

Test nozzle holder assembly : 1 688 901 004

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 9 681 230 713

Outside diameter x Wall thickness x Length mm : 6,35x2,00x1016

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)  
 Rack travel in mm : 10.50  
 Firing order : 1-8-4-2-7-3-6-5

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.25...11.35

Del.quantity cm<sup>3</sup>/ : 12.9...13.1

100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (-)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.10

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (-)

Spread cm<sup>3</sup> : 0.6

100 s: (-)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 800

Del.quantity : 129.0...131.0

1000 : (-)

Spread cm<sup>3</sup> : 4.0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 10.30

Speed rpm : 1340...1350

2nd rack travel in: 3.65

Speed rpm : 1505...1535

4th rack travel in: 1640

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

Speed rpm : 100  
Minimum rack trave: 7.00  
Speed rpm : 300  
Rack travel in mm : 4.10...6.20  
Rack travel in mm : 1.45  
Speed rpm : 490...510  
Speed rpm : 580  
Maximum rack trave: 1.10

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 900  
Rack travel in m: 11.30...11.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 206.6  
Rack travel mm : \*

Measurement

Speed 1/min : 500  
1st pressure hPa : 519.8  
Rack travel in m: \*\*

START CUT-OUT

Speed 1/min : 170...230

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 127.5...133.5  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 103.0...111.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

BREAKAWAY

1st version

A08

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1340...1360

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0  
1000 s: (-)  
Rack travel in mm : 21.00

Remarks:

Start-of-delivery mark is at start of  
delivery of cylinder 1

\* Start of LDA (manifold-pressure  
compensator) movement

\*\* Ende der LDA-Bewegung

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,4 a11  
 Edition : 24.8.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 058 040

Injection pump  
 Pump designation : PES&P100A921/5RS286  
 EP type number : 0 412 008 025  
 Governor  
 Governor design. : R9V300...1300PA304KR  
 Governor no. : 0 421 815 099

## Customer-spec. information

Customer : IHC

Engine : DVT 800

1st version kW : 220.8

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 040

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 9 681 230 713

Outside diameter  
 x Wall thickness  
 x Length mm : 6,35x2,00x1016

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)  
 Rack travel in mm : 10.50  
 Firing order : 1-8-4-2-7-3-6-5

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed ... rpm : 1300

Rack travel in mm : 10.15...10.25

Del.quantity cm<sup>3</sup>/ : 11.4...11.6

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (-)

2nd speed rpm : 300  
 Rack travel in mm : 4.90...5.10  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (-)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1300  
 Aneroid pressure h: 800  
 Del.quantity : 114.0...116.0  
 1000 : (-)  
 Spread cm<sup>3</sup> : 3.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 62...70

### Testing:

1st rack travel in: 9.20  
 Speed rpm : 1340...1350  
 2nd rack travel in: 3.65  
 Speed rpm : 1505...1535  
 4th rack travel in: 1640  
 Speed rpm : 0.00...1.00

LOW IDLE 1  
 Control lever

position degrees: 6...14

Testing:

Speed rpm : 100  
Minimum rack trave: 7.00  
Speed rpm : 300  
Rack travel in mm : 4.10...6.20  
Rack travel in mm : 1.45  
Speed rpm : 490...510  
Speed rpm : 680  
Maximum rack trave: 1.10

TORQUE CONTROL

Dimension a mm : 1300  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 900  
Rack travel in m: 10.40...10.60  
3rd speed rpm : 700  
Rack travel in m: 10.10...10.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 133  
Rack travel mm : \*

Measurement

Speed 1/min : 500

1st pressure hPa : 506.5  
Rack travel in m: \*\*

START CUT-OUT

Speed 1/min : 170...230

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 118.0...124.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 84.0...88.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.20  
Speed rpm : 1340...1360

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 184.0...224.0  
1000 s: (-)  
Rack travel in mm : 21.00

Remarks:

y y FEHLENDEN TEXT ÜBERSETZEN y y

\* Start of LDA (manifold-pressure  
compensator) movement

\*\* Ende der LDA-Bewegung

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,4 a10  
 Edition : 24.8.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 058 041

Injection pump  
 Pump designation : PES8P100A921/SRS286  
 EP type number : 0 412 008 025  
 Governor  
 Governor design. : RQV300...1300PA305KR  
 Governer no. : 0 421 815 100

## Customer-spec. information

Customer : IHC

Engine : DVT 800

1st version kW : 20.6

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 040

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 004

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 9 681 230 713

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x1016

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values   

## BEGINNING OF DELIVERY

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)  
 Rack travel in mm : 10.50  
 Firing order : 1-8-4-2-7-3-6-5

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 9.50...9.60

Del.quantity cm<sup>3</sup>/ : 10.7...10.9

100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (-)

2nd speed rpm : 300

Rack travel in mm : ?

Del.quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (-)

Spread cm<sup>3</sup> : 0.6

100 s: (-)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 800

Del.quantity : 107.0...109.0

1000 : (-)

Spread cm<sup>3</sup> : 4.0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 8.50

Speed rpm : 1340...1350

2nd rack travel in: 3.65

Speed rpm : 1505...1535

4th rack travel in: 1640

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

Speed rpm : 100  
Minimum rack trave: 7.00  
Speed rpm : 300  
Rack travel in mm : 4.10...6.20  
Rack travel in mm : 1.45  
Speed rpm : 490...510  
Speed rpm : 580  
Maximum rack trave: 1.10

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 9.50...9.60  
2nd speed rpm : 850  
Rack travel in m: 11.80...12.00  
3rd speed rpm : 700  
Rack travel in m: 10.40...10.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : \*

Measurement

Speed 1/min : 500

1st pressure hPa : 600  
Rack travel in m: \*\*

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 128.0....134.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 5.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 83.0...91.0  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.50  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 187.0...227.0  
1000 s: (-)  
Rack travel in mm : 21.00

LOW IDLE

Speed rpm : 300  
Del.quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6.0  
1000 s: (-)

Remarks:

y y FEHLENDEN TEXT ÜBERSETZEN y y

\* Start of LDA (manifold-pressure compensator) movement

\*\* Ende der LDA-Bewegung

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 k  
 Edition : 30.8.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 005

Injection pump  
 Pump designation : PES6P100A720RS1010  
 EP type number : 0 412 006 004  
 Governor  
 Governor design. : RSV400...1050P2/370D  
 R  
 Governer no. : 0 421 835 046

Customer-spec. information  
 Customer : JOHN DEERE

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.40...2.50  
 : (2.35...2.55)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-160-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 12.75...12.85  
 Del.quantity cm3/ : 14.8...15.0  
 100 s: (-)  
 Spread cm3 : 0.3  
 100 s: (-)  
 2nd speed rpm : 400  
 Rack travel in mm : 6.60...6.80  
 Del.quantity cm3/ : 1.9...2.5  
 100 s: (-)  
 Spread cm3 : 0.3  
 100 s: (-)

**GUIDE SLEEVE POSITION**  
 Control-lever position  
 Degree: -3  
 Speed rpm : 1000  
 Rack travel in mm : 0.20...1.20

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 800  
 Del.quantity : 148.0...150.0  
 1000 : (-)  
 Spread cm3 : 3.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 34...42

Testing:  
 1st rack travel in: 11.80  
 Speed rpm : 1085...1095  
 2nd rack travel in: 4.50  
 Speed rpm : 1135...1165  
 4th rack travel in: 1260  
 Speed rpm : 0.30...1.50

**LOW IDLE 1**  
 Control lever  
 position degrees: 13...21  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 6.20

### Testing:

Speed rpm : 200  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.80  
Speed rpm : 590...610  
Speed rpm : 750  
Maximum rack trave: 1.50

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 750  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 500  
Rack travel in m: 13.60...13.80

### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : 186.6  
Rack travel mm : \*

#### Measurement

Speed 1/min : 550

1st pressure hPa : 526.5  
Rack travel in m: \*\*

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 800  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 164.5...167.5  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 108.0...116.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1085...1095

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.00  
1000 s: (-)  
Rack travel in mm : 21.00

### HIGH IDLE

1st version  
Speed rpm : 1155  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 24.0...32.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 3.0  
1000 s: (-)

### Remarks:

\* Start of LDA (manifold-pressure compensator) movement

\*\* Ende der LDA-Bewegung

Start-of-delivery mark is at start of delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7.7 k 3  
 Edition : 24.8.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 006

Injection pump  
 Pump designation : PES6P100A720RS1010  
 EP type number : 0 412 006 004  
 Governor  
 Governor design. : RSV400...1050P2/367D  
 Governer no. : 0 421 835 045

Customer-spec. information  
 Customer : JOHN DEERE

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.40...2.50  
 : (2.35...2.55)

Rack travel in mm : 10.50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-160-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 12.45...12.55  
 Del.quantity cm<sup>3</sup>/ : 14.1...14.3  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (-)  
 2nd speed rpm : 400  
 Rack travel in mm : 6.60...6.80  
 Del.quantity cm<sup>3</sup>/ : 2.0...2.6  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (-)

**GUIDE SLEEVE POSITION**  
 Control-lever position  
 Degree: -3  
 Speed rpm : 1000  
 Rack travel in mm : 0.20...1.20  
 Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**  
 1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 800  
 Del.quantity : 141.7...143.7  
 1000 : (-)  
 Spread cm<sup>3</sup> : 3.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 34...42

Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 1085...1095  
 2nd rack travel in: 4.50  
 Speed rpm : 1135...1165  
 4th rack travel in: 1260  
 Speed rpm : 0.30...1.50

**LOW IDLE 1**  
 Control lever  
 position degrees: 13...21  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 6.60

### Testing:

Speed rpm : 200  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 7.00...7.20  
Rack travel in mm : 2.75  
Speed rpm : 590...610  
Speed rpm : 750  
Maximum rack travel: 1.20

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 750  
Rack travel in m: 13.30...13.50  
3rd speed rpm : 500  
Rack travel in m: 13.30...13.50

### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : 186.6  
Rack travel mm : \*

#### Measurement

Speed 1/min : 550  
1st pressure hPa : 526.5  
Rack travel in m: \*\*

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 800  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 159.0...162.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 108.0...116.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1085...1095

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.00  
1000 s: (-)  
Rack travel in mm : 21.00

### HIGH IDLE

1st version  
Speed rpm : 1155  
Rack travel in mm : 5.90  
Del.quantity cm<sup>3</sup>/ : 25.0...35.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 20.6...26.6  
1000 s: (-)  
Spread cm<sup>3</sup> : 3.0  
1000 s: (-)

### Remarks:

\* Start of LDA (manifold-pressure compensator) movement

\*\* Ende der LDA-Bewegung  
Start-of-delivery mark is at start of delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 k 2  
 Edition : 24.8.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 011  
 Injection pump  
 Pump designation : PES6P100A720RS1010  
 EP type number : 0 412 006 004  
 Governor  
 Governor design. : RSV400...1050P7/413D  
 R  
 Governer no. : 0 421 835 073  
 Customer-spec. information  
 Customer : JOHN DEERE

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter x Wall thickness x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.35...2.45  
 : (2.30...2.50)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-160-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed	rpm	: 1040	-----
Rack travel in mm		: 13.05...13.15	-----
Del.quantity cm <sup>3</sup> /		: 14.8...15.0	-----
	100 s:	(-)	-----
Spread	cm <sup>3</sup>	: 0.3	-----
	100 s:	(-)	-----
2nd speed	rpm	: 400	
Rack travel in mm		: 7.00...7.20	
Del.quantity cm <sup>3</sup> /		: 1.6...2.0	
	100 s:	(-)	
Spread	cm <sup>3</sup>	: 0.3	
	100 s:	(-)	

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1040  
 Del.quantity : 148.8...150.8  
 1000 : (-)  
 Spread cm<sup>3</sup> : 3.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 35...43

Testing:  
 1st rack travel in: 12.10  
 Speed rpm : 1065...1075  
 2nd rack travel in: 4.90  
 Speed rpm : 1095...1125

## LOW IDLE 1

Control lever  
 position degrees: 13...21  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 6.70

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 460  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 450...500

Remarks:

Start-of-delivery mark is at start of delivery of cylinder 1

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1040  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 750  
Rack travel in m: 13.60...14.00

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 163.5...166.5  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0  
1000 s: (-)  
Rack travel in mm : 21.00

HIGH IDLE

1st version  
Speed rpm : 1155  
Rack travel in mm : 5.90  
Del.quantity cm<sup>3</sup>/ : 25.0...35.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 20.6...26.6  
1000 s: (-)  
Spread cm<sup>3</sup> : 3.0  
1000 s: (-)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 d9

Edition : 24.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 076 027

## Injection pump

Pump designation : PES6P100A720RS296

EP type number : 0 412 016 037

Governor

Governor design. : RSV400...1050PO/414D

R

Governer no. : 0 421 835 071

## Customer-spec. information

Customer : JOHN DEERE

Engine : 6619 A

## TEST BENCH REQUIREMENTS

### Test oil

inlet temp. °C : 38...42

### Overflow valve

: 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

### Outside diameter

x Wall thickness

x Length mm : 6,00X1,50X600

### (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85

: (2,70...2,90)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12,80

Del.quantity cm<sup>3</sup>/ : 18,7...18,8

100 s: (-)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,80

Del.quantity cm<sup>3</sup>/ : 1,9...2,5

100 s: (-)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

## Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 187,4...189,4

1000 : (-)

Spread cm<sup>3</sup> : 4,0

1000 : (-)

## RATED SPEED

### 1st version

Control lever

position degrees: 35...43

## Testing:

1st rack travel in: 11,80

Speed rpm : 1095...1105

2nd rack travel in: 5,90

Speed rpm : 1135...1165

## LOW IDLE 1

Control lever

position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6,30

Testing:  
Speed rpm : 100  
Minimum rack trave: 19,004  
Rack travel in mm : 6,70...6,90  
Rack travel in mm : 2,00  
Speed rpm : 520...530

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 680  
Rack travel in m: 12,80  
2nd speed rpm : 500  
Rack travel in m: 13,15...13,25

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 382,0  
Rack travel mm : 10,65...10,75

Measurement  
Speed 1/min : 550  
1st pressure hPa : 634,0  
Rack travel in m: 12,10...12,70

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 630  
Del.quantity cm<sup>3</sup>/ : 192,8...196,8  
1000 s: (-)  
Spread cm<sup>3</sup> : 6,0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 112,0...120,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6,0  
1000 s: (-)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11,80  
Speed rpm : 0195...1105

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170,0  
1000 s: (-)  
Rack travel in mm : 19,00...21,00

## HIGH IDLE

1st version  
Speed rpm : 1150  
Rack travel in mm : 5,90  
Del.quantity cm<sup>3</sup>/ : 47,0...57,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6,0  
1000 s: (-)

## LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6,80  
Del.quantity cm<sup>3</sup>/ : 19,0...25,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4,0  
1000 s: (-)

## Remarks:

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 h

Edition : 24.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 076 029

## Injection pump

Pump designation : PES6P110A720RS337

EP type number : 0 412 016 044

Governor

Governor design. : RSV400...1050PO/416D

R

Governer no. : 0 421 835 074

## Customer-spec. information

Customer : JOHN DEERE

Engine : 6619 T

## TEST BENCH REQUIREMENTS

### Test oil

inlet temp. °C : 38...43

### Overflow valve

: 1 457 443 014

Inlet press., bar : 1.5

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter x Wall thickness x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85

: (2,70...2,90)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10,20

Del. quantity cm<sup>3</sup>/ : 13,5...13,7

100 s: (-)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,00

Del. quantity cm<sup>3</sup>/ : 2,1...2,7

100 s: (-)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

## Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del. quantity : 135,0...137,0

1000 : (-)

Spread cm<sup>3</sup> : 4,0

1000 : (-)

## RATED SPEED

### 1st version

Control lever

position degrees: 35...43

## Testing:

1st rack travel in: 9,20

Speed rpm : 1095...1105

2nd rack travel in: 9,20

Speed rpm : 1090...1110

## LOW IDLE 1

Control lever

position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5,50

Testing:  
Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 5,90...6,10  
Rack travel in mm : 2,00  
Speed rpm : 520...580

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10,20  
2nd speed rpm : 630  
Rack travel in m: 10,70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 246,5  
Rack travel mm : 9,85...9,95

Measurement  
Speed 1/min : 500  
1st pressure hPa : 373,2  
Rack travel in m: 10,30...10,50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 630  
Del.quantity cm<sup>3</sup>/ : 145,0...149,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6,0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 113,6...121,6  
1000 s: (-)  
Spread cm<sup>3</sup> : 6,0  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9,20

Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : <190,0  
1000 s: (-)  
Rack travel in mm : 19,00...21,00

#### HIGH IDLE

1st version  
Aneroid pressure h: 800  
Speed rpm : 1150  
Rack travel in mm : 6,20  
Del.quantity cm<sup>3</sup>/ : 45,0...55,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6,0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6,00  
Del.quantity cm<sup>3</sup>/ : 20,8...26,8  
1000 s: (-)

#### Remarks:

Start-of-delivery mark at 14° angular  
displacement of the cam after start of  
delivery of cylinder 1 with control-rod  
travel = 10,50 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 d3  
 Edition : 28.07.89

Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 030

Injection pump  
 Pump designation : PES6P110A720RS296  
 Governor  
 Governor design. : RSV400...1050P7/419D  
 R

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6619 A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
 : (2,70...2,90)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,5 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1040

Rack travel in mm : 12,80

Del. quantity cm<sup>3</sup>/ : 18,8...19,0

100 s: (18,6...19,2)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,30

Del. quantity cm<sup>3</sup>/ : 1,90...2,50

100 s: (-)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 188,0...190,0

1000 : (186,0...192,0)

Spread cm<sup>3</sup> : 4,0

1000 : (-)

## RATED SPEED

1st version

Control lever  
 position degrees: 56...64

Testing:

1st rack travel in: 11,80

Speed rpm : 1060...1070

2nd rack travel in: 5,00

Speed rpm : 1095...1125

## LOW IDLE 1

Control lever

position degrees: 20...28

Testing:

Speed rpm : 100

Minimum rack trave: 19,00

Speed rpm : 400  
Rack travel in mm : 6,30  
Rack travel in mm : 2,00  
Speed rpm : 450...500

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1040  
Rack travel in m: 11,80  
2nd speed rpm : 680  
Rack travel in m: 11,80  
3rd speed rpm : 500  
Rack travel in m: 12,10...12,30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 630  
Del.quantity cm<sup>3</sup>/ : 193,0...197,0  
1000 s: (191,0...199,0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11,80  
Speed rpm : 1060...1070

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170,0  
1000 s: (-)

#### HIGH IDLE

1st version  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 18,00...28,00  
1000 s: (-)

#### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 19,0...25,0  
1000 s: (-)

#### Remarks:

Start-of-delivery mark is at 15°  
angular displacement of the cam after  
start of delivery at cylinder 1 with  
control-rod travel 9,00...12,00 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 l 3

Edition : 02.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 076 N031

## Injection pump

Pump designation : PES6P110A720RS305

Governor

Governor design. : RSV400...1050P7/420D  
R

## Customer-spec. information

Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,78...2,85  
: (2,70...2,90)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1040

Rack travel in mm : 11,70

Del.quantity cm<sup>3</sup>/ : 15,7...15,9

100 s: (15,5...16,1)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,00

Del.quantity cm<sup>3</sup>/ : 1,9...2,5

100 s: (-)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1040

Del.quantity : 157,0...159,0

1000 : (155,0...161,0)

Spread cm<sup>3</sup> : 4,0

1000 : (-)

## RATED SPEED

### 1st version

Control lever

position degrees: 56...64

## Testing:

1st rack travel in: 10,70

Speed rpm : 1065...1075

2nd rack travel in: 5,00

Speed rpm : 1095...1125

## LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6,30

### Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,20...6,40  
Rack travel in mm : 2,00  
Speed rpm : 450...500

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 12,30  
2nd speed rpm : 1040  
Rack travel in m: 11,70

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 169,0...173,0  
1000 s: (167,0...175,0)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 10,70  
Speed rpm : 1065...1075

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130,0  
1000 s: (-)

### HIGH IDLE

1st version  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 17,0...27,0  
1000 s: (-)

### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 19,0...25,0  
1000 s: (-)

### Remarks:

Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 a8  
 Edition : 24.08.89

Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 032

Injection pump : PES6P110A720RS296  
 EP type number : 0 412 016 037

Governor : RSV400...1050PO/426D  
 Governor design. : R

Governer no. : 0 421 835 082

## Customer-spec. information

Customer : JOHN DEERE

Engine : 6619 A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
 : (2,70...2,90)

Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12,20

Del.quantity cm3/ : 17,2...17,4

100 s: (-)

Spread cm3 : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,80

Del.quantity cm3/ : 1,9...2,5

100 s: (-)

Spread cm3 : 0,4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
 Del.quantity : 172,0...174,0

1000 : (-)

Spread cm3 : 4,0

1000 : (-)

## RATED SPEED

1st version

Control lever  
 position degrees: 36...44

## Testing:

1st rack travel in: 11,20  
 Speed rpm : 1095...1105

2nd rack travel in: 5,90  
 Speed rpm : 1135...1165

## LOW IDLE 1

Control lever  
 position degrees: 15...23

Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6,30

Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,70...6,90  
Rack travel in mm : 2,00  
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 630  
Rack travel in m: 12,60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 273,2  
Rack travel mm : 9,65...9,75

Measurement  
Speed 1/min : 500

1st pressure hPa : 526,5  
Rack travel in m: 11,30...1,90

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 177,0...180,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6,0  
1000 s: (-)  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 84,0...92,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6,0  
1000 s: (-)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11,20  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170,0  
1000 s: (-)  
Rack travel in mm : 19,00...21,00

HIGH IDLE

1st version  
Speed rpm : 1150  
Rack travel in mm : 5,90  
Del.quantity cm<sup>3</sup>/ : 47,0...57,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6,0  
1000 s: (-)

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6,80  
Del.quantity cm<sup>3</sup>/ : 19,0...25,0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4,0  
1000 s: (-)

Remarks:

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10.1 d4

Edition : 28.07.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 076 033

## Injection pump

Pump designation : PES6P110A720RS296

Governor

Governor design. : RSV400...1050PO/428D  
R

## Customer-spec. information

Customer : JOHN DEERE

Engine : 6619 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
: (2,70...2,90)  
Rack travel in mm : 9,00...12,00  
Firing order : 1-5-36-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12,00

Del.quantity cm<sup>3</sup>/ : 16,45...16,65

100 s: (16,2...16,8)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,50

Del.quantity cm<sup>3</sup>/ : 1,7...2,3

100 s: (-)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 164,5...166,5

1000 : (162,0...168,0)

Spread cm<sup>3</sup> : 4,0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11,00

Speed rpm : 1095...1105

2nd rack travel in: 6,30

Speed rpm : 1135...1165

## LOW IDLE 1

Control lever

position degrees: 15...23

## Setting point w/out bumper spring

Speed rpm : 400  
Rack travel in mm : 6,50

## Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,30  
Rack travel in mm : 2,00  
Speed rpm : 520...580

## TORQUE CONTROL

### Torque control curve - 1st version

1st speed rpm : 1050  
Rack travel in m: 12,00  
2nd speed rpm : 850  
Rack travel in m: 12,00  
3rd speed rpm : 550  
Rack travel in m: 12,30

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : 610  
Rack travel mm : 12.30...12.40

### Measurement

Speed 1/min : 550

1st pressure hPa : 80  
Rack travel in m: \*

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 169,0...172,0  
1000 s: (167,0...174,0)

Aneroid pressure h: -

Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 90,0...98,0  
1000 s: (88,0...100,0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 11,00  
Speed rpm : 1095...1105

## STARTING FUEL DELIVERY

B02

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180,0...200,0  
1000 s: (-)

## HIGH IDLE

1st version  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 48,0...58,0  
1000 s: (-)

## LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 17,0...23,0  
1000 s: (-)

## Remarks:

\* Start of LDA (manifold-pressure compensator) movement

Start-of-delivery mark is at 15° angular displacement of the cam after start of delivery at cylinder 1 with control-rod travel 9.00...12.00 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 a11

Edition : 02.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 076 035

Injection pump

Pump designation : PES6P110A720RS361

Governor

Governor design. : RSV400...1050P2/433D  
R

## Customer-spec. information

Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
: (2,70...2,90)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11,10

Del. quantity cm<sup>3</sup>/ : 14,3...14,5

100 s: (14,0...14,8)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,10

Del. quantity cm<sup>3</sup>/ : 1,9...2,5

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del. quantity : 143,0...145,0

1000 : (140,0...148,0)

Spread cm<sup>3</sup> : 4,0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10,10

Speed rpm : 1090...1110

2nd rack travel in: 5,80

Speed rpm : 1135...1165

## LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6,10

Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,00...6,20  
Rack travel in mm : 2,00  
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050  
Rack travel in m: 11,10  
2nd speed rpm : 650  
Rack travel in m: 11,65...11,76

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 800  
Pressure hPa : 220  
Rack travel mm : \*

Measurement

Speed 1/min : 800

1st pressure hPa : 665  
Rack travel in m: 11,00...11,10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ s : 153,5...156,5  
1000 s: (150,5...159,5)  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ s : 89,0...95,0  
1000 s: (86,0...98,0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10,10  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ s : 150,0...170,0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ s : 47,0...57,0  
1000 s: (-)

LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ s : 19,0...25,0  
1000 s: (-)

Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

\* Start of LDA (manifold-pressure  
compensator) movement

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 d5

Edition : 02.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 076 036

## Injection pump

Pump designation : PES6P110A720RS296

Governor

Governor design. : RSV400...1050P7/436D  
R

## Customer-spec. information

Customer : JOHN DEERE

Engine : 6619 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values   

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
               : (2,70...2,90)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1040

Rack travel in mm : 12,10

Del.quantity cm<sup>3</sup>/ : 17,5...17,7

100 s: (17,3...17,9)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,30

Del.quantity cm<sup>3</sup>/ : 1,9...2,5

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1040

Del.quantity : 175,0...177,0

1000 : (173,0...179,0)

Spread cm<sup>3</sup> : 4,0

1000 : (-)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 11,10

Speed rpm : 1060...1070

2nd rack travel in: 4,40

Speed rpm : 1085...1115

## LOW IDLE 1

Control lever

position degrees: 23...31

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6,30

### Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,20...6,40  
Rack travel in mm : 2,00  
Speed rpm : 400...470

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1040  
Rack travel in m: 12,10  
2nd speed rpm : 800  
Rack travel in m: 12,40  
3rd speed rpm : 650  
Rack travel in m: 12,60

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 179,5...182,5  
1000 s: (178,0...184,0)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11,10  
Speed rpm : 1060...1070

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190,0...210,0  
1000 s: (-)

### HIGH IDLE

#### 1st version

Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 17,0...27,0  
1000 s: (-)

### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 19,0...25,0  
1000 s: (-)

### Remarks:

Start-of-delivery mark is at 15°  
angular displacement of the cam after  
start of delivery at cylinder 1 with  
control-rod travel 9,00...12,00 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 l 4  
 Edition : 02.08.89

Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 037

Injection pump  
 Pump designation : PES6P110A720RS305  
 Governor  
 Governor design. : RSV400...1050P7/437D  
 R

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 1 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
 : (2,70...2,90)

Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1040

Rack travel in mm : 10,80

Del.quantity cm3/ : 14,3...14,5

100 s: (14,1...14,7)

Spread cm3 : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,10

Del.quantity cm3/ : 1,8...2,6

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1040

Del.quantity : 143,0...145,0

1000 : (141,0...147,0)

Spread cm3 : 4,0

1000 : (-)

## RATED SPEED

## 1st version

Control lever

position degrees: 60...68

## Testing:

1st rack travel in: 9,80

Speed rpm : 1060...1070

2nd rack travel in: 4,10

Speed rpm : 1085....1115

## LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6,10

### Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,00...6,20  
Rack travel in mm : 445  
Speed rpm : 2,00

### TORQUE CONTROL

Dimension a mm : 0,80  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10,80  
2nd speed rpm : 650  
Rack travel in m: 11,40  
3rd speed rpm : 600  
Rack travel in m: 11,60

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 153,5...156,5  
1000 s: (152,0...158,0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9,80  
Speed rpm : 1060...1070

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150,0...180,0  
1000 s: (-)

### HIGH IDLE

#### 1st version

Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 17,0...27,0  
1000 s: (-)

### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 18,0...26,0  
1000 s: (-)

### Remarks:

Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 l 5  
 Edition : 02.08.89

Replaces : -  
 Test oil : ISO-4113

Combination no. : D 402 976 040

Injection pump  
 Pump designation : PES6P110A720RS305  
 Governor  
 Governor design. : RSV400...1050P2/442D  
 R

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
 : (2,70...2,90)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11,10

Del. quantity cm<sup>3</sup>/ : 14,3...14,5

100 s: (14,1...14,7)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,10

Del. quantity cm<sup>3</sup>/ : 1,8...2,6

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 143,0...145,0

1000 : (141,0...147,0)

Spread cm<sup>3</sup> : 4,0

1000 : (-)

## RATED SPEED

### 1st version

Control lever

position degrees: 40...48

## Testing:

1st rack travel in: 10,10

Speed rpm : 1090...1110

2nd rack travel in: 5,90

Speed rpm : 1135...1165

5th rack travel in: 1300

Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever

position degrees: 17...25

## Setting point w/out bumper spring

Speed rpm : 400  
Rack travel in mm : 6,10

## Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,00...6,20  
Rack travel in mm : 2,00  
Speed rpm : 570...630

## TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 950  
Rack travel in m: 11,15  
2nd speed rpm : 650  
Rack travel in m: 11,70...11,90

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : 530  
Rack travel mm : 11.65...11.75

### Measurement

Speed 1/min : 550

1st pressure hPa : 330  
Rack travel in m: \*

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 153,5...156,5  
1000 s: (152,0...158,0)

Aneroid pressure h: -

Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 88,0...104,0  
1000 s: (86,0...106,0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 10,10  
Speed rpm : 1095...1105

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150,0...170,0  
1000 s: (-)

## HIGH IDLE

1st version  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 47,0...57,0  
1000 s: (-)

## LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 18,0...26,0  
1000 s: (-)

### Remarks:

Start-of-delivery mark = 13.25° after start of delivery cyl. 1.

\* Start of LDA (manifold-pressure compensator) movement

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 d7  
 Edition : 02.08.89

Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 041

Injection pump  
 Pump designation : PES6P110A720RS296  
 Governor  
 Governor design. : RSV400...1050PO/439D  
 R

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6619 T

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
 : (2,70...2,90)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing Tolerance + - ° : 0-60-120-180-240-300  
 : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11,20

Del.quantity cm<sup>3</sup>/ : 14,7...14,9

100 s: 14,6...15,0

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,20

Del.quantity cm<sup>3</sup>/ : 2,0...2,4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 146,0...150,0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 35...43

## Testing:

1st rack travel in: 10,20

Speed rpm : 1090...1110

2nd rack travel in: 6,10

Speed rpm : 1135...1165

5th rack travel in: 1300

Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6,20

### Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 5,50...5,70  
Rack travel in mm : 2,00  
Speed rpm : 500...560

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 450  
Rack travel in m: 11,70...12,50

### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 740  
Rack travel mm : 11.70...12.50

### Measurement

Speed 1/min : 550  
1st pressure hPa : 50  
Rack travel in m: \*

### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 112,0...118,0  
1000 s: (-)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10,20  
Speed rpm : 1100...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190,0...210,0  
1000 s: (-)

### HIGH IDLE

1st version  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 47,0...57,0  
1000 s: (-)

### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 20,0...24,0  
1000 s: (-)

### Remarks:

Start-of-delivery mark is at 15°  
angular displacement of the cam after  
start of delivery at cylinder 1 with  
control-rod travel 9,00...12,00 mm

\* Start of LDA (manifold-pressure  
compensator) movement

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 d6

Edition : 02.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 420 076 042

Injection pump

Pump designation : PES6P110A720RS296

Governor

Governor design. : RSV400...1050P7/438D  
R

Customer-spec. information

Customer : JOHN DEERE

Engine : 6619 T

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
: (2,70...2,90)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1040

Rack travel in mm : 11,00

Del.quantity cm<sup>3</sup>/ : 14,7...14,9

100 s: (14,5...15,1)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,10

Del.quantity cm<sup>3</sup>/ : 1,9...2,5

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1040

Del.quantity : 147,0...149,0

1000 : (145,0...151,0)

Spread cm<sup>3</sup> : 4,0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 10,00

Speed rpm : 1060...1080

2nd rack travel in: 4,10

Speed rpm : 1085...1115

## LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6,10

### Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,00...6,20  
Rack travel in mm : 440  
Speed rpm : 2,00

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 450  
Rack travel in m: 11.70...12.30

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10,00  
Speed rpm : 1065...1075

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190,0...210,0  
1000 s: (-)

### HIGH IDLE

1st version  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 17,0...27,0  
1000 s: (-)

### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 19,0...25,0  
1000 s: (-)

### Remarks:

Start-of-delivery mark is at 15°  
angular displacement of the cam after  
start of delivery at cylinder 1 with  
control-rod travel 9.00...12.00 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VAL 7,2 a  
 Edition : 19.05.88  
 Replaces : 9,3.87  
 Test oil : ISO-4113

Combination no. : 0 402 076 056

Injection pump  
 Pump designation : PES6P110A320RS505  
 EP type number : 0 412 016 072  
 Governor  
 Governor design. : RSV325...1150POA522  
 Governer no. : 0 421 833 242

## Customer-spec. information

Customer : VALMET

Engine : 612 DSJ

1st version kW : 165.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
               : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 13.8...14.1

100 s: (13.5...14.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 7.1...7.3

Del.quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 138.0...141.0

1000 : (135.5...143.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

## 1st version

Control lever

position degrees: 36...44

## Testing:

1st rack travel in: 11.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1290...1310  
4th rack travel in: 1460  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.7

Testing:  
Speed rpm : 100  
Minimum rack trave: 8.60  
Speed rpm : 325  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 460...520

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 1150  
Rack travel in m: 11.90...12.10

Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.00...12.10

Measurement  
Speed 1/min : 500  
  
1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 400  
Rack travel in m: 11.50...11.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 102.0...105.0  
1000 s: (99.5...107.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.00

Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.10...7.30  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm3 : 3.00  
1000 s: (6.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 13,4 g  
 Edition : 02.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 700

Injection pump  
 Pump designation : PES6P110A420LS3008  
 Governor  
 Governor design. : RSV350...1050P0/381D  
 R

## Customer-spec. information

Customer : IHC

Engine : DTI-817 C

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 2.8

Test nozzle holder  
 assembly : 1 688 901 003

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,7

Test lines : 9 681 230 713

Outside diameter  
 x Wall thickness  
 x Length mm : 6,35x2,21x999,36

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10  
 : (1,95...2,15)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13,30

Del. quantity cm³/ : 20,3...20,5

100 s: (20,1...20,7)

Spread cm³ : 0,6

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6,50

Del. quantity cm³/ : 4,3...5,5

100 s: (-)

Spread cm³ : 0,4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del. quantity : 203,0...205,0

1000 : (201,0...207,0)

Spread cm³ : 6,0

1000 : (-)

## RATED SPEED

### 1st version

Control lever

position degrees: 39...47

## Testing:

1st rack travel in: 12,30

Speed rpm : 1090...1210

2nd rack travel in: 3,85

Speed rpm : 1175...1205

4th rack travel in: 1240

Speed rpm : 1,30...2,00

## LOW IDLE 1

Control lever

position degrees: 17...25

## Setting point w/out bumper spring

Speed rpm : 400  
Rack travel in mm : 5.00

## Testing:

Speed rpm : 100  
Minimum rack trave: 20,00  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Speed rpm : 400  
Maximum rack trave: 2.00

## TORQUE CONTROL

### Torque control curve - 1st version

1st speed rpm : 1030  
Rack travel in m: 13.30  
2nd speed rpm : 700  
Rack travel in m: 14.20...14.30  
3rd speed rpm : 350  
Rack travel in m: 14.20...14.30

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 690  
Rack travel mm : 14.20...14.30

### Measurement

Speed 1/min : 500

1st pressure hPa : 100  
Rack travel in m: \*

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 800  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 238,0...245,0  
1000 s: (236,0...247,0)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 151,0...159,0  
1000 s: (149,0...161,0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12,30  
Speed rpm : 1085...1095

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190,0...230,0  
1000 s: (-)

## HIGH IDLE

### 1st version

Speed rpm : 1140  
Del.quantity cm<sup>3</sup>/ : 30,0...40,0  
1000 s: (-)

## LOW IDLE

Speed rpm : 350  
Del.quantity cm<sup>3</sup>/ : 21,0...31,0  
1000 s: (-)

### Remarks:

\* Start of LDA (manifold-pressure compensator) movement

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 13,4 h

Edition : 23.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 076 704

## Injection pump

Pump designation : PES6P110A420LS3008

Governor

Governor design. : RSV350...1050PO/386D  
R

## Customer-spec. information

Customer : IH

Engine : DTI-817C

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Inlet press., bar : 2.8

Opening pressure, bar : 207...210

Test lines : 9 681 230 713

Outside diameter  
x Wall thickness  
x Length mm : 6,00X2,00X1016

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10  
: (1,95...2,15)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm<sup>3</sup>/ : 10,4...11,8

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm : 12,00

Del.quantity cm<sup>3</sup>/ : 17,6...18,6

100 s: (-)

3rd speed rpm : 600

Rack travel in mm : 6,00

Del.quantity cm<sup>3</sup>/ : 3,4...4,4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 196,0...202,0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 12,30

Speed rpm : 1090...1110

2nd rack travel in: 8,00

Speed rpm : 1135...1165

3rd rack travel in: 1,30...6,40

Speed rpm : 1190

4th rack travel in: 1240

Speed rpm : 1,30...2,00

## LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5,50

Testing:

Speed rpm : 100

Minimum rack trave: 20,00

Speed rpm : 350

Rack travel in mm : 5,40...5,60

Rack travel in mm : 1,65  
Speed rpm : 390..410

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1030  
Rack travel in m: 9,00  
2nd speed rpm : 750  
Rack travel in m: 9,70...9,90  
3rd speed rpm : 450  
Rack travel in m: 9,70...9,90

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 132  
Rack travel mm : \*

##### Measurement

Speed 1/min : 500

1st pressure hPa : 488  
Rack travel in m: \*\*

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 800  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 230,0...240,0  
1000 s: (-)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 158,5...159,5  
1000 s: (-)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11,00  
Speed rpm : 1085...1095

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225,0...295,0  
1000 s: (-)

#### HIGH IDLE

##### 1st version

Speed rpm : 1145  
Rack travel in mm : 4,70...5,70

#### LOW IDLE

Speed rpm : 350  
Del.quantity cm<sup>3</sup>/ : 24,0...34,0  
1000 s: (-)

##### Remarks:

\* Start of LDA (manifold-pressure compensator) movement

\*\* Ende der LDA-Bewegung

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 13,4 d1  
 Edition : 02.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 711  
 Injection pump  
 Pump designation : PES6P110A420LS3043  
 Governor  
 Governor design. : RSV350...1050P0/430D  
 R  
 Customer-spec. information  
 Customer : IHC  
 Engine : DTI-817 C

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Inlet press., bar : 2.8  
 Test nozzle holder  
 assembly : 1 688 901 003  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,7  
 Test lines : 9 681 230 713  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,35X2,12X999,36

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10  
 : (1,95...2,15)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1050
-----		
Rack travel in mm	:	13,30
-----		
Del.quantity cm <sup>3</sup> /	:	20,3...20,5
-----		
100 s:		(20,1...20,7)
-----		
Spread	cm <sup>3</sup>	: 0,6
-----		
100 s:		(-)
-----		
2nd speed	rpm	: 350
Rack travel in mm	:	5,60
Del.quantity cm <sup>3</sup> /	:	4,2...6,2
100 s:		(-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 800  
 Del.quantity : 203,0...205,0  
 1000 : (201,0...207,0)  
 Spread cm<sup>3</sup> : 6,0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 39...47

Testing:  
 1st rack travel in: 12,30  
 Speed rpm : 1090...1110  
 2nd rack travel in: 3,85  
 Speed rpm : 1175...1205  
 4th rack travel in: 1240  
 Speed rpm : 1,30...2,00

LOW IDLE 1  
 Control lever  
 position degrees: 17...25  
 Setting point w/out bumper spring  
 Speed rpm : 350

Rack travel in mm : 5.00	Del.quantity cm <sup>3</sup> / : 265,0...305,0 1000 s: (-)
Testing:	
Speed rpm : 100	HIGH IDLE
Minimum rack trave: 20.00	
Speed rpm : 350	1st version
Rack travel in mm : 5.30...5.70	Speed rpm : 1140
Speed rpm : 400	Del.quantity cm <sup>3</sup> / : 30,0...40,0
Maximum rack trave: 2.00	1000 s: (-)
TORQUE CONTROL	
Torque control curve - 1st version	
1st speed rpm : 1050	LOW IDLE
Rack travel in m: 13.30	Speed rpm : 350
2nd speed rpm : 350	Del.quantity cm <sup>3</sup> / : 42,0...62,0
Rack travel in m: 14,20...14.30	1000 s: (-)
Aneroid/Altitude Compensator Test	
1st version	
Setting	
Speed rpm : 500	
Pressure hPa : 630	
Rack travel mm : 14.20...14.30	
Measurement	
Speed 1/min : 500	
1st pressure hPa : 90	
Rack travel in m: *	
FUEL DELIVERY CHARACTERISTICS	
1st version	
Aneroid pressure h: 800	
Speed rpm : 700	
Del.quantity cm <sup>3</sup> / : 238,0...245,0	
1000 s: (236,0...247,0)	
Aneroid pressure h: -	
Speed rpm : 500	
Del.quantity cm <sup>3</sup> / : 151,0...159,0	
1000 s: (149,0...161,0)	
BREAKAWAY	
1st version	
1mm rack travel less than	
full load rack tr: 12,30	
Speed rpm : 1085...1095	
STARTING FUEL DELIVERY	
Speed rpm : 100	

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 13,4 d2

Edition : 02.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 076 713

## Injection pump

Pump designation : PES6P110A42LOLS3043

Governor

Governor design. : RSV350...1050PO/432D  
R

## Customer-spec. information

Customer : IHC

Engine : DTI-817 C

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Inlet press., bar : 2.8

Test nozzle holder  
assembly : 1 688 901 003

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 9 681 230 713

Outside diameter  
x Wall thickness  
x Length mm : 6,35x2,21x999,36

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,00...2,10  
: (1,95...2,15)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13,00

Del.quantity cm<sup>3</sup>/ : 19,3...19,5

100 s: (19,1...19,7)

Spread cm<sup>3</sup> : 0,6

100 s: (-)

2nd speed rpm : 350

Rack travel in mm : 5,60

Del.quantity cm<sup>3</sup>/ : 2,1...3,1

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 193,0...195,0

1000 : (191,0...197,0)

Spread cm<sup>3</sup> : 6,0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 39...47

## Testing:

1st rack travel in: 12,00

Speed rpm : 1090...1210

2nd rack travel in: 3,85

Speed rpm : 1175...1205

4th rack travel in: 1240

Speed rpm : 1.30...2.00

## LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.50

Testing:

Speed rpm : 100

Minimum rack trave: 20,00

Speed rpm : 350

Rack travel in mm : 5.30...5.70

Speed rpm : 400

Maximum rack trave: 2,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13,00

2nd speed rpm : 750

Rack travel in m: 13,70...13,90

3rd speed rpm : 450

Rack travel in m: 13,70...13,90

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 550

Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : 90

Rack travel in m: \*

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 750

Del. quantity cm<sup>3</sup>/ : 227,0...233,0

1000 s: (225,0...235,0)

Aneroid pressure h: -

Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 158,0...166,0

1000 s: (156,0...168,0)

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260,0...310,0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1140

Del. quantity cm<sup>3</sup>/ : 30,0...40,0

1000 s: (-)

LOW IDLE

Speed rpm : 350  
Del. quantity cm<sup>3</sup>/ : 21,0...31,0  
1000 s: (-)

Remarks:

\* Start of LDA (manifold-pressure compensator) movement

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12,00

Speed rpm : 1085...1095

STARTING FUEL DELIVERY

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 o 3  
 Edition : 11.03.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 717

Injection pump  
 Pump designation : PES6P120A820LS3095-1  
 EP type number : 0 412 026 715  
 Governor  
 Governor design. : RSV350...750POA487-4  
 Governer no. : 0 421 833 265

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM407A

1st version kW : 169.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 730

Rack travel in mm : 12.40...12.50

Del.quantity cm³/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm³ : 0.5

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm³/ : 3.0...4.0

100 s: (-)

Spread cm³ : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 730

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm³ : 5.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 29...37

Testing:

1st rack travel in: 11.40  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 776...789  
4th rack travel in: 900  
Speed rpm : 0.30...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.8  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

:

APPLICATION

Generator

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 e  
 Edition : 16.05.88  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 402 076 719

Injection pump  
 Pump designation : PES6P110A820LS3131-1  
 EP type number : 0 412 016 717  
 Governor  
 Governor design. : RSV350...750POA517  
 Governer no. : 0 421 833 215

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM427

1st version kW : 142.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
 (4.25...4.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 13.6...13.8

100 s: (13.3...14.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 136.0...138.0

1000 : (133.0...141.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 24...32

Testing:

1st rack travel in: 11.20

Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 900  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 360...400

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 740...750

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ 1000 s: 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:  
:

Observe VDT-I-420/120

#### APPLICATION

Generator

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 1

Edition : 15.06.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 076 722

## Injection pump

Pump designation : PES6P120A720RS3203

EP type number : 0 412 026 728

## Governor

Governor design. : RSV400...1100P2A534

Governor no. : 0 421 833 275

## Customer-spec. information

Customer : JOHN DEERE

Engine : 6466 HF-050

1st version kW : 194.0

2nd version kW : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42Overflow valve  
: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101Opening  
pressure, bar : 207...210Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
(3.50...3.70)  
Rack travel in mm : 10.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.60...11.70

Del.quantity cm<sup>3</sup>/ : 14.8...15.0

100 s: (14.5...15.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.6...2.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 148.0...150.0

1000 : (145.5...152.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 10.70  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 535...595

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 750  
Rack travel in m: 12.50...12.70

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.70...9.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 605  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 820  
Rack travel in m: 11.70...12.10  
3rd pressure hPa : 1200  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 180.0...185.0  
1000 s: (177.5...187.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : -  
1000 s: (118.5...128.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1145...1155

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 18.5...23.5  
1000 s: (16.0...26.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks: : JOHN DEERE # RE32035

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y  
 Edition : 15.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump  
 Pump designation : PES6P120A720RS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV400...1100P2A534-1  
 Governer no. : 0 421 833 276

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 AF-050

1st version kW : 180.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 14.2...14.4

100 s: (13.9...14.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 4.7...4.9

Del.quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.5...2.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 142.0...144.0

1000 : (139.5...146.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:  
 1st rack travel in: 10.20  
 Speed rpm : 1145...1155  
 2nd rack travel in: 4.00  
 Speed rpm : 1200...1210  
 4th rack travel in: 1350  
 Speed rpm : 0.30...1.40

LOW IDLE 1  
 Control lever  
 position degrees: 16...24  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 4.3

Testing:  
 Speed rpm : 100  
 Minimum rack trave: 19.00  
 Speed rpm : 400  
 Rack travel in mm : 4.70...4.90  
 Rack travel in mm : 2.00  
 Speed rpm : 535...595

TORQUE CONTROL  
 Torque control curve - 1st version  
 1st speed rpm : 1100  
 Rack travel in m: 11.20...11.30  
 2nd speed rpm : 700  
 Rack travel in m: 12.40...12.60

Aneroid/Altitude  
 Compensator Test

1st version  
 Setting  
 Speed rpm : 500  
 Pressure hPa : 900  
 Rack travel mm : 12.40...12.60

Measurement  
 Speed 1/min : 500  
 1st pressure hPa : -  
 Rack travel in m: 10.00...10.20  
 2nd pressure hPa : 540  
 Rack travel in m: 10.60...10.70  
 3rd pressure hPa : 740  
 Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
 Aneroid pressure h: 900  
 Speed rpm : 700  
 Del.quantity cm3/ : 181.0...185.0  
 1000 s: (178.0...188.0)  
 Aneroid pressure h: -  
 Speed rpm : 500

Del.quantity cm3/ : -  
 1000 s: (127.0...137.0)

BREAKAWAY  
 1st version  
 1mm rack travel less than

full load rack tr: 10.20  
 Speed rpm : 1145...1155

INTERMEDIATE RATED SPEED  
 Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 135.0...155.0  
 1000 s: (130.0...160.0)  
 Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
 Rack travel in mm : 4.70...4.90  
 Del.quantity cm3/ : 17.5...22.5  
 1000 s: (15.0...28.0)  
 Spread cm3 : 4.50  
 1000 s: (7.50)

Remarks: : JOHN DEERE # RE32033

Adjustment without torque-control  
 spring retainer with 1 mm less  
 control-rod travel. Increase in  
 full-load delivery with torque-control  
 spring retainer.

Starting/full-load transition speed  
 from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
 after start of delivery cyl. 1

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 d 2  
 Edition : 07.03.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 725

Injection pump  
 Pump designation : PES6P110A820LS3131-1  
 EP type number : 0 412 016 717  
 Governor  
 Governor design. : RSV350..1050POA487-5  
 Governer no. : 0 421 833 285

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 177.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
 : (4.25...4.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.50...112.00

Del.quantity cm<sup>3</sup>/ : 15.0...15.2

100 s: (14.7...15.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.3

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 150.0...152.0

1000 : (147.5...154.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.50

Speed rpm : 1075...1085  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1350  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 7.00...7.30  
Rack travel in mm : 2.00  
Speed rpm : 400...440

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 133.0...137.0  
1000 s: (130.0...140.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1075...1085

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.00...7.30  
Del.quantity cm<sup>3</sup>/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.00)

Remarks:

C06

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 f  
 Edition : 15.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 076 726

Injection pump  
 Pump designation : PES6P110A720RS3209  
 EP type number : 0 412 016 722  
 Governor  
 Governor design. : RSV400...1050P0A537  
 Governer no. : 0 421 833 287

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6619 A

1st version kW : 168.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)

Rack travel in mm : 10.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 16.5...16.7

100 s: (16.2...16.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.6...2.1

100 s: (1.3...2.3)

Spread cm³ : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 165.0...167.0

1000 : (162.5...169.5)

Spread cm³ : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

## Testing:

1st rack travel in: 10.10

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1145...1155

3rd rack travel in: 4.00  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 505...565

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 700  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 177.5...182.5  
1000 s: (175.0...185.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1090...1100

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 175.0...195.0  
1000 s: (170.0...200.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 16.0...21.0  
1000 s: (13.5...23.5)

Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks: : JOHN DEERE # RE33898

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular  
displacement of the cam after start of  
delivery of cylinder 1 with control-rod  
travel = 10.50 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,4 a 8  
 Edition : 02.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 088 024

Injection pump  
 Pump designation : PES8P100A921/SRS286  
 Governor  
 Governor design. : RSV350...1100P0/418D  
 R

Customer-spec. information  
 Customer : IHC

Engine : DV 800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 2.8

Test nozzle holder  
 assembly : 1 688 901 004

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 9 681 230 713

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,70...2,80  
 : (2,65...2,85)

Rack travel in mm : 9,00...12,00  
 Firing order : 1-8-4-2-7-3-6-5

Phasing : 0-45-90-135-180-225-  
 Phasing : 270-315  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

C09

1st speed	rpm	: 1100
Rack travel in mm : 10,30		
Del. quantity cm³/		: 11,8...12,1
100 s: (11,6...12,3)		
Spread	cm³	: 0,4
100 s: (-)		
2nd speed	rpm	: 350
Rack travel in mm : 5,00		
Del. quantity cm³/		: 1,6...2,3
100 s: (-)		
Spread	cm³	: 0,6
100 s: (-)		

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70  
 Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version	Speed	rpm	: 1100
	Del. quantity		: 118,0...121,0
	1000		: (116,0...123,0)
	Spread	cm³	: 4,0
		1000	: (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:  
 1st rack travel in: 9,30  
 Speed rpm : 1140...1150  
 2nd rack travel in: 3,10  
 Speed rpm : 1235...1265

LOW IDLE 1  
 Control lever  
 position degrees: 19...27  
 Setting point w/out bumper spring  
 Speed rpm : 350  
 Rack travel in mm : 6,00

Testing:  
 Speed rpm : 150  
 Minimum rack trave: 19,00

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Speed rpm : 430  
Maximum rack trave: 2.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 10,30  
2nd speed rpm : 860  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 700  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 126,0...132,0  
1000 s: (124,0...134,0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9,30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200,0...250,0  
1000 s: (-)

#### HIGH IDLE

1st version  
Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 13,0...33,0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 350  
Del.quantity cm<sup>3</sup>/ : 16,0...23,0  
1000 s: (-)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 12.0 C  
 Edition : 16.05.88  
 Replaces : 13.5.87  
 Test oil : ISO-4113

Combination no. : 0 402 638 801

Injection pump  
 Pump designation : PEBP120A120LS7127  
 EP type number : 0 412 628 817  
 Governor  
 Governor design. : RQ300/1100PA134-2  
 Governer no. : 0 421 801 364

Customer-spec. information  
 Customer : STEYR

Engine : WD 815.66

1st version kW : 277.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm	: 5.00...5.10 (4.95...5.15)
Rack travel in mm	: 9.00...12.00
Firing order	: 1- 5- 4- 8- 6- 3- 7- 2

Phasing	: 0-45-90-135-180-225- 270-315
Tolerance + - °	: 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.50...11.60

Del.quantity cm<sup>3</sup>/ : 17.6...17.8

100 s: (17.3...18.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 176.0...178.0

1000 : (173.0...181.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL  
Dimension a mm : 0.25  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 700  
Rack travel in m: 12.00...12.10  
3rd speed rpm : 1000  
Rack travel in m: 11.60...11.80  
4th speed rpm : 850  
Rack travel in m: 11.80...12.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.00...12.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.60  
2nd pressure hPa : 760  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 470  
Rack travel in m: 10.00...10.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm3/ : 183.0...191.0  
1000 s: (181.0...193.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 122.0...126.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...260.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Firing order : 1- 5- 3- 6- 2- 4

## Note remarks

Test sheet : SCA 11.0 v2  
 Edition : 07.09.89  
 Replaces : 24.7.87  
 Test oil : ISO-4113

Combination no. : 0 402 646 804

Injection pump  
 Pump designation : PE6P120A720RS7004  
 EP type number : 0 412 626 801  
 Governor  
 Governor design. : RQ900PAS28  
 Governer no. : 0 421 801 127

Customer-spec. information  
 Customer : SAAB - SCANIA

Engine : DS11 43,44,45

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019Opening  
 pressure, bar : 207...210Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values   

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
                : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 207.0...209.0

1000 : (204.0...212.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 22...30

## Testing:

1st rack travel in: 11.80

Speed rpm : 900...905

2nd rack travel in: 4.00

Speed rpm : 941...955

4th rack travel in: 1000

Speed rpm : 0.00...1.00

## LOW IDLE 1

## Testing:

Speed rpm : 100

Rack travel in mm : 2.00

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

## HIGH IDLE

1st version  
Rack travel in mm : 4.90...5.10  
Spread cm<sup>3</sup> : 4.00  
1000 s: (7.00)

## Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

## ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Oct. 17, 1988

Engine model DS 11 - 17° before top  
dead center.

Engine model DSI 11 - 16° before top  
dead center.

Firing sequence of engine:  
1-5-3-6-2-4.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11.0 j1  
 Edition : 07.03.88  
 Replaces : 13.5.87  
 Test oil : ISO-4113

Combination no. : 0 402 646 821

Injection pump  
 Pump designation : PE6P120A720RS7104  
 EP type number : 0 412 626 807  
 Governor  
 Governor design. : RQV200...1000PA725  
 Governer no. : 0 421 813 457

Customer-spec. information  
 Customer : SAAB-SCANIA

Engine : DSC 11 01

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
               : (4.45...4.65)

Rack travel in mm : 6.00...8.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.00...14.70  
 & maximum rack tra: 21.00  
 Difference ° CS : 1.85...2.55

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del.quantity cm<sup>3</sup>/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm<sup>3</sup> : 0.7

100 s: (1.0)

2nd speed rpm : 225.0

Rack travel in mm : 4.4...4.6

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

## (B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed	rpm	: 225
	travel mm	: 1.20...1.60
2nd speed	rpm	: 350
	travel mm	: 2.40...3.00
3rd speed	rpm	: 650
	travel mm	: 4.50...5.10
4th speed	rpm	: 1045
	travel mm	: 8.40...8.60
5th speed	rpm	: 1165
	travel mm	: 10.00...10.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version	Del. quantity cm <sup>3</sup> / : 201.0...209.0 1000 s: (199.0...211.0)
Speed rpm : 700	Aneroid pressure h: -
Aneroid pressure h: 900	Speed rpm : 500
Del. quantity : 210.0...212.0	Del. quantity cm <sup>3</sup> / : 164.0...168.0
1000 : (207.0...215.0)	1000 s: (162.0...170.0)
Spread cm <sup>3</sup> : 7.00	
1000 : (10.00)	
RATED SPEED	BREAKAWAY
1st version	1st version
Control lever	1mm rack travel less than
position degrees: 59...67	full load rack tr: 13.70
Testing:	Speed rpm : 1040...1050
1st rack travel in: 13.70	
Speed rpm : 1040...1050	STARTING FUEL DELIVERY
2nd rack travel in: 4.00	
Speed rpm : 1150...1180	Speed rpm : 100
4th rack travel in: 1300	Del. quantity cm <sup>3</sup> / : 240.0...290.0
Speed rpm : 0.00...1.00	Rack travel in mm : 20.00...21.00
LOW IDLE 1	LOW IDLE
Control lever	Speed rpm : 225
position degrees: 5...13	Rack travel in mm : 4.40...4.60
Testing:	Del. quantity cm <sup>3</sup> / : 14.0...18.0
Speed rpm : 100	1000 s: (-)
Minimum rack trave: 5.90	Spread cm <sup>3</sup> : 3.00
Speed rpm : 225	1000 s: (6.00)
Rack travel in mm : 4.40...4.60	
Rack travel in mm : 2.00	
Speed rpm : 310...370	
Aneroid/Altitude Compensator Test	Remarks: :
1st version	Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm
Setting	Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.
Speed rpm : 500	
Pressure hPa : 900	ADDITIONAL INFORMATION
Rack travel mm : 14.70...14.80	Check and set without ROBO diaphragam
Measurement	For comb. with letter index see VDT-I-400/116.
Speed 1/min : 500	For sealing see VDT-I-400/117.
1st pressure hPa : -	Scania test specifications taken over on May 17, 1984
Rack travel in m: 11.80...11.90	Start of delivery - engine: 22° before TDC at control-rod travel = 6.0... 8.0 mm
2nd pressure hPa : 410	
Rack travel in m: 14.00...14.10	
3rd pressure hPa : 290	
Rack travel in m: 12.40...12.60	
FUEL DELIVERY CHARACTERISTICS	
1st version	
Aneroid pressure h: 900	
Speed rpm : 1000	

Firing sequence of engine:  
1-5-3-6-2-4.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11.0 t  
 Edition : 13.06.88  
 Replaces : 9.10.87  
 Test oil : ISO-4113

Combination no. : 0 402 646 838

Injection pump  
 Pump designation : PE6P120A320LS7808  
 EP type number : 0 412 626 816  
 Governor  
 Governor design. : RQ300/1050PA762-4  
 Governor no. : 0 421 801 390

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM441 LA

1st version kW : 240.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm<sup>3</sup>/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

Testing:  
Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL  
Dimension a mm : 0.30  
2nd speed rpm : 1050  
Rack travel in m: 14.70...14.90  
3rd speed rpm : 800  
Rack travel in m: 15.10...15.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

Measurement  
Speed 1/min : 600  
  
1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 550  
Rack travel in m: 12.70...12.90  
3rd pressure hPa : 1050  
Rack travel in m: 14.00...14.10  
4th pressure hPa : 1150  
Rack travel in m: 14.40...14.60  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1350  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 236.0...239.0  
1000 s: (233.0...242.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1350  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.70  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 t 2  
 Edition : 25.03.88  
 Replaces : 27.3.87  
 Test oil : ISO-4113

Combination no. : 0 402 646 843

Injection pump  
 Pump designation : PE6P120A320LS7808  
 EP type number : 0 412 626 816  
 Governor  
 Governor design. : RQV300...1050PA797-2  
 Governer no. : 0 421 813 614

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM441 LA

1st version kW : 240.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm<sup>3</sup>/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.40

2nd speed rpm : 600  
 travel mm : 4.90...5.10

3rd speed rpm : 1075  
 travel mm : 7.40...7.60

4th speed rpm : 1100  
 travel mm : 8.00...8.40

5th speed rpm : 1150  
 travel mm : 9.00...9.40

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 900  
 Del.quantity : 211.0...213.0  
 1000 : (208.0...216.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

#### RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:  
 1st rack travel in: 13.80  
 Speed rpm : 1095...1110  
 2nd rack travel in: 4.00  
 Speed rpm : 1170...1200  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.50

LOW IDLE 1  
 Control lever  
 position degrees: 15...23

Testing:  
 Speed rpm : 200  
 Minimum rack trave: 7.70  
 Speed rpm : 300  
 Rack travel in mm : 5.50...5.80

CONSTANT REGULATION  
 Speed rpm : 300...450

TORQUE CONTROL  
 Dimension a mm : 0.30  
 2nd speed rpm : 1050  
 Rack travel in m: 14.60...14.80  
 3rd speed rpm : 800  
 Rack travel in m: 15.90...15.10  
 4th speed rpm : 700

#### Aneroid/Altitude Compensator Test

1st version  
 Setting  
 Speed rpm : 600  
 Pressure hPa : 900  
 Rack travel mm : 13.90...14.10

Measurement  
 Speed 1/min : 600

1st pressure hPa : 300  
 Rack travel in m: 10.70...10.90  
 2nd pressure hPa : 550  
 Rack travel in m: 12.70...12.90

3rd pressure hPa : 1050  
 Rack travel in m: 14.00...14.10  
 4th pressure hPa : 1150  
 Rack travel in m: 14.40...14.60  
 5th pressure hPa : -  
 Rack travel in m: 9.00...9.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
 Aneroid pressure h: 1350  
 Speed rpm : 1050  
 Del.quantity cm<sup>3</sup>/ : 236.0...239.0  
 1000 s: (233.0...242.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: 1350  
 Speed rpm : 800  
 Del.quantity cm<sup>3</sup>/ : 242.0...246.0  
 1000 s: (239.0...249.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm<sup>3</sup>/ : 133.0...135.0  
 1000 s: (130.0...138.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)

#### BREAKAWAY

1st version  
 1mm rack travel less than  
 full load rack tr: 13.80  
 Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
 1000 s: (186.0...214.0)

Remarks:  
 :

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 e  
 Edition : 26.02.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 646 859

Injection pump  
 Pump designation : PE6P130A720RS7153  
 EP type number : 0 412 636 809  
 Governor  
 Governor design. : RQV300...950PA883  
 Governer no. : 0 421 813 690

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8210.42.300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X3.00X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 29.7...30.0

100 s: (29.3...30.3)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 2.9...3.1

Del.quantity cm<sup>3</sup>/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm<sup>3</sup> : 1.0

100 s: (1.4)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.50

2nd speed rpm : 450

travel mm : 2.80...3.40

3rd speed rpm : 700

travel mm : 5.10...5.50

4th speed rpm : 950

travel mm : 7.10...7.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 950

Aneroid pressure h: 900

Del.quantity : 297.0...300.0

1000 : (293.5...303.5)

Spread cm<sup>3</sup> : 6.00

1000 : (10.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

### Testing:

1st rack travel in: 11.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 3...11  
Speed rpm : 300  
Rack travel in mm : 2.90...3.10

### CONSTANT REGULATION

Speed rpm : 310...430

### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.80...12.90

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 500  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 380  
Rack travel in m: 9.20...9.60

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 157.0...160.0  
1000 s: (153.5...163.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 990...1000

## INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

## STARTING FUEL DELIVERY

Speed rpm : 100

### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 2.90...3.10  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

### Remarks:

:  
Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 16.0 c

Edition : 15.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 646 883

Injection pump

Pump designation : PE6P130A720RS7122-2

EP type number : 0 412 636 813

Governor

Governor design. : RQV225...930PA922

Governor no. : 0 421 813 763

Customer-spec. information

Customer : VOLVO-TRUCK

Engine : TD162 FS,FL,FJ

1st version kW : 357.0

Rated speed : 1860

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm	: 3.60...3.70
	: (3.55...3.75)
Rack travel in mm	: 9.00...12.00
Firing order	: 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm<sup>3</sup>/ : 28.8...29.1

100 s: (28.5...29.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm<sup>3</sup>/ : 2.5...3.0

100 s: (2.3...3.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.10...2.70

3rd speed rpm : 700

travel mm : 5.60...6.20

4th speed rpm : 975

travel mm : 8.20...8.40

5th speed rpm : 1090

travel mm : 9.50...9.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.70...10.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 288.5...291.5  
1000 : (285.0...295.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 12.30  
Speed rpm : 970...980  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.50  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 225...450

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.30...13.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 80  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 610  
Rack travel in m: 12.90...13.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 182.0...185.0  
1000 s: (178.5...188.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 970...980

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (121.0...149.0)  
Rack travel in mm : 9.70...9.90

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 25.5...30.5  
1000 s: (23.0...33.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (8.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 3.0...3.1 mm.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 14,2 a1  
 Edition : 26.02.88  
 Replaces : 6.10.86  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 802  
 Injection pump  
 Pump designation : PE8P120A920/4LS7002S  
 EP type number : 0 412 628 800  
 Governor  
 Governor design. : RQV200...1050PA547  
 Governer no. : 0 421 813 293  
 Customer-spec. information  
 Customer : SAAB-SCANIA  
 Engine : DS14 07

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 015  
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
               : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-  
               6- 8

Phasing : 0-45-90-135-180-225-  
               270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700  
 Rack travel in mm : 13.20...13.30  
 Del.quantity cm<sup>3</sup>/ : 18.7...18.9  
               100 s: (18.4...19.2)

Spread cm<sup>3</sup> : 0.6  
               100 s: (0.9)

2nd speed rpm : 225.0  
 Rack travel in mm : 4.9...5.1  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.4  
               100 s: (-)  
 Spread cm<sup>3</sup> : 0.3  
               100 s: (0.6)

(B) Setting of injection pump with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 225  
               travel mm : 1.20...1.40  
 2nd speed rpm : 280  
               travel mm : 1.80...2.10  
 3rd speed rpm : 350  
               travel mm : 2.40...2.80  
 4th speed rpm : 1090  
               travel mm : 8.40...8.60  
 5th speed rpm : 1200  
               travel mm : 9.80...10.10

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 900  
 Del.quantity : 187.0...189.0  
               1000 : (184.0...192.0)

Spread      cm<sup>3</sup> : 6.00  
              1000 : (9.00)

Del. quantity cm<sup>3</sup>/ : 137.0...141.0  
              1000 s: (135.0...143.0)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 225  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 350  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 230  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 184.0...192.0  
              1000 s: (182.0...194.0)  
Aneroid pressure h: -  
Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.90...5.10  
Del. quantity cm<sup>3</sup>/ : 10.0...14.0  
Spread cm<sup>3</sup> : 3.00  
              1000 s: (6.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Aug. 18, 1983

Engine start of delivery: 18° BTDC

Engine firing sequence: 1-5-4-2-6-3-7-8

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a 1  
 Edition : 22.04.88  
 Replaces : 18.9.87  
 Test oil : ISO-4113

Combination no. : 0 402 648 812

Injection pump  
 Pump designation : PE8P120A320LS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQ300/1050PA717  
 Governer no. : 0 421 801 258

## Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm<sup>3</sup>/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.7

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.70  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

Aneroid/Altitude

Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 820  
Rack travel in m: 14.90...15.10  
4th pressure hPa : 1100  
Rack travel in m: 15.90...16.00  
5th pressure hPa : -  
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1150  
Speed rpm : 1050  
Del.quantity cm3/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del.quantity cm3/ : 247.0...251.0  
1000 s: (244.0...254.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 b  
 Edition : 25.03.88  
 Replaces : 18.9.87  
 Test oil : ISO-4113

Combination no. : 0 402 648 824

Injection pump  
 Pump designation : PE8P120A320LS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQV300..1050PA797  
 Governer no. : 0 421 813 532

## Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm<sup>3</sup>/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 1075

travel mm : 7.40...7.60

4th speed rpm : 1100

travel mm : 8.00...8.20

5th speed rpm : 1150

travel mm : 9.00...9.20

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 680  
Del.quantity : 220.0...222.0  
1000 : (217.0...225.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 54...62

#### Testing:

1st rack travel in: 14.20  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 15...23

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 600

1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90

3rd pressure hPa : 820  
Rack travel in m: 14.90...15.00  
4th pressure hPa : 1100  
Rack travel in m: 15.90...16.00  
5th pressure hPa : -  
Rack travel in m: 11.40...11.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1150  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 247.0...251.0  
1000 s: (244.0...254.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

#### Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a10  
 Edition : 11.03.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 833

Injection pump  
 Pump designation : PE8P120A320LS7801-1  
 EP type number : 0 412 628 818  
 Governor  
 Governor design. : RQV300..1050PA866-3  
 Governer no. : 0 421 813 703

## Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.6...6.0  
 Del.quantity cm³/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm³ : 0.6  
 100 s: (1.0)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
	travel mm	: 1.20...1.40
2nd speed	rpm	: 600
	travel mm	: 4.90...5.10
3rd speed	rpm	: 1100
	travel mm	: 8.00...8.50
4th speed	rpm	: 1170
	travel mm	: 9.20...9.80

### GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1090  
 Rack travel in mm : 16.50...18.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure hPa : 1100  
Del. quantity : 181.0...183.0  
1000 : (178.0...186.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 1.60  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 950  
Rack travel in m: 13.50...13.60  
4th speed rpm : 830  
Rack travel in m: 14.30...14.50

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : -  
Rack travel mm : 11.20...11.50

Measurement  
Speed 1/min : 600

1st pressure hPa : 420

Rack travel in m: 11.90...12.10  
2nd pressure hPa : 600  
Rack travel in m: 13.60...13.80

#### START CUT-OUT

Speed 1/min : 270 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/s : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/s : 152.0...154.0 \*  
1000 s: (149.0...157.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/s : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/s : 180.0...200.0  
1000 s: (176.0...204.0)

#### Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 i  
 Edition : 22.04.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 02 648 843

Injection pump  
 Pump designation : PE8P120A320LS7815  
 EP type number : 0 412 628 827  
 Governor  
 Governor design. : RQV350..1050PA870-2  
 Governor no. : 0 421 813 687

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442LA

1st version kW : 350.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.10...15.20

Del.quantity cm3/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.90...2.10  
 2nd speed rpm : 700  
 travel mm : 4.10...4.50  
 3rd speed rpm : 1100  
 travel mm : 7.60...8.00  
 4th speed rpm : 1200  
 travel mm : 9.50...9.90

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure hPa : 1700  
Del.quantity : 254.0...256.0  
1000 : (251.0...259.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

#### CONSTANT REGULATION

Speed rpm : 350...600

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.10...15.20  
2nd speed rpm : 1000  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 930  
Rack travel in m: 15.40...15.50

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.50...14.70

Measurement  
Speed 1/min : 600

1st pressure hPa : 330  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 600

Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1260  
Rack travel in m: 14.70...14.90  
4th pressure hPa : 1400  
Rack travel in m: 15.10...15.30  
5th pressure hPa : -  
Rack travel in m: 8.80...9.20

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 239.0...241.0  
1000 s: (236.0...244.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1700  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 264.0...267.0  
1000 s: (261.0...270.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 194.0...196.0 \*  
1000 s: (191.0...199.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

\* = Set at reduced delivery stop.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 k  
 Edition : 16.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 845

Injection pump  
 Pump designation : PE8P120A320LS7816  
 EP type number : 0 412 628 829  
 Governor  
 Governor design. : RQV300..1050PA797-5  
 Governer no. : 0 421 813 702

## Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm	: 5.20...5.30
	: (5.15...5.35)
Rack travel in mm	: 20.00...21.00
Firing order	: 8- 7- 2- 6- 3- 5- 4- 1

Phasing	: 0-45-90-135-180-225- 270-315
Tolerance + - °	: 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed	rpm : 600
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Rack travel in mm	: 13.60...13.80
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Del.quantity cm <sup>3</sup> /	: 23.4...23.7
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100 s:	(23.1...24.0)
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Spread	cm <sup>3</sup> : 0.5
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100 s:	(0.9)
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2nd speed	rpm : 300.0
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Rack travel in mm	: 5.9...6.5
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Del.quantity cm <sup>3</sup> /	: 1.6...2.2
--------------------------------	-------------

100 s:	(1.3...2.5)
--------	-------------

Spread	cm <sup>3</sup> : 0.6
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100 s:	(1.0)
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## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed	rpm : 300
travel mm	: 1.20...1.40
2nd speed	rpm : 800
travel mm	: 5.80...6.10
3rd speed	rpm : 1120
travel mm	: 8.20...8.80
4th speed	rpm : 1180
travel mm	: 9.60...10.40

### GUIDE SLEEVE POSITION

Control-lever position	
Degree:	-1
Speed	rpm : 1100
Rack travel in mm	: 15.20...17.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure hPa : 900  
Del. quantity : 234.0...237.0  
1000 : (231.0...240.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 13.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 1.30  
2nd speed rpm : 1050  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 800  
Rack travel in m: 14.90...15.10

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

Measurement  
Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 650  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 1350  
Rack travel in m: 14.50...14.70

4th pressure hPa : 1500  
Rack travel in m: 14.80...14.90  
5th pressure hPa : -  
Rack travel in m: 9.90...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure hPa : 1600  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 252.0...256.0  
1000 s: (249.0...259.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure hPa : 1600  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 263.0...267.0  
1000 s: (260.0...270.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure hPa : -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 m  
 Edition : 16.05.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 849

Injection pump  
 Pump designation : PE8P120A320LS7810  
 EP type number : 0 412 628 819  
 Governor  
 Governor design. : RQV300..1050PA797-7  
 Governer no. : 0 421 813 707

## Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 368.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 19.50...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm<sup>3</sup>/ : 23.9...24.1

. 100 s: (23.6...24.4)

Spread cm<sup>3</sup> : 0.5

. 100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

. 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

. 100 s: (1.0)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 1.20...1.40
2nd speed	rpm	: 800
travel mm		: 5.80...6.10
3rd speed	rpm	: 1120
travel mm		: 8.20...8.80
4th speed	rpm	: 1180
travel mm		: 9.60...10.40

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 239.0...241.0  
1000 : (236.0...244.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.10

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 0.25  
2nd speed rpm : 1050  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 800  
Rack travel in m: 13.30...15.50

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.30...14.50

Measurement  
Speed 1/min : 600

1st pressure hPa : 320  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 620  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1100  
Rack travel in m: 14.40...14.50

4th pressure hPa : -  
Rack travel in m: 8.70...8.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 257.0...260.0  
1000 s: (254.0...263.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 265.0...269.0  
1000 s: (262.0...272.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21.9 y 2  
 Edition : 13.06.88  
 Replaces : 12.11.87  
 Test oil : ISO-4113

Combination no. : 0 402 670 805

Injection pump  
 Pump designation : PE12P120A320LS7807-2  
 EP type number : 0 412 620 812  
 Governor  
 Governor design. : RSV375..1050POA535-1  
 Governer no. : 0 421 833 282

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 491.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 14.70...14.90

Del.quantity cm<sup>3</sup>/ : 21.6...21.9

100 s: (21.3...22.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 375.0

Rack travel in mm : 5.5...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 800

Del.quantity : 216.0...219.0

1000 : (213.0...222.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 36...44

Testing:  
1st rack travel in: 13.70  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 375  
Rack travel in mm : 5.50...5.80

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 14.70...14.90  
2nd speed rpm : 925  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 830  
Rack travel in m: 15.50...15.70

Aneroia/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 600  
  
1st pressure hPa : 350  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 1000  
Rack travel in m: 15.00...15.20  
4th pressure hPa : 1100  
Rack travel in m: 15.40...15.60  
5th pressure hPa : -  
Rack travel in m: 10.30...10.60

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1250  
Speed rpm : 1030  
Del.quantity cm<sup>3</sup>/ 1000 s: 221.0...223.0  
Spread cm<sup>3</sup> : 8.00  
1000 s: (218.0...226.0)  
Aneroid pressure h: 1250  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ 1000 s: 237.0...241.0  
Spread cm<sup>3</sup> : 8.00  
1000 s: (234.0...244.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ 1000 s: 134.0...136.0  
Spread cm<sup>3</sup> : 8.00  
1000 s: (131.0...139.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.70  
Speed rpm : 1070...1080

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ 1000 s: 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21.9 y 3  
 Edition : 08.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 670 806

Injection pump  
 Pump designation : PE12P120A320LS7807-2  
 EP type number : 0 412 620 812  
 Governor  
 Governor design. : RSV350..1050POA538  
 Governer no. : 0 421 833 300

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 A

1st version kW : 390.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 17.2...17.4

100 s: (16.9...17.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 900

Del.quantity : 172.0...174.0  
 1000 : (169.0...177.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 36...44

Testing:

1st rack travel in: 11.40  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 950  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 875  
Rack travel in m: 13.40...13.60  
4th speed rpm : 750  
Rack travel in m: 13.90...14.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.50...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 11.30...11.50  
2nd pressure hPa : 500  
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 g 3  
 Edition : 08.06.88  
 Replaces : 7.12.87  
 Test oil : ISO-4113

Combination no. : 0 402 678 808

Injection pump  
 Pump designation : PE8P120A320LS7801-2  
 EP type number : 0 412 628 825  
 Governor  
 Governor design. : RSV350...1050POA535  
 Governer no. : 0 421 833 281

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442LA

1st version kW : 320.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (4.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 : 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.60

Del.quantity cm<sup>3</sup>/ : 21.5...21.8

100 s: (21.2...22.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 750

Del.quantity : 215.0...218.0

1000 : (212.0...221.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 36...44

Testing:

1st rack travel in: 14.00  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 360...420

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 15.00...15.20  
2nd speed rpm : 850  
Rack travel in m: 15.70...15.90  
3rd speed rpm : 925  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 950  
Rack travel in m: 14.90...15.10  
4th pressure hPa : 1050  
Rack travel in m: 15.30...15.50  
5th pressure hPa : -

Rack travel in m: 11.20...11.50

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1250  
Speed rpm : 1030  
Del.quantity cm<sup>3</sup>/ : 230.0...232.0  
1000 s: (227.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 242.0...245.0  
1000 s: (239.0...248.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 147.0...149.0  
1000 s: (144.0...152.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.00  
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

Observe VDT-I-420/120

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1a11  
 Edition : 30.05.89  
 Replaces : 10.2.89  
 Test oil : ISO-4113

Combination no. : 0 402 736 800

Injection pump  
 Pump designation : PES6P120A720/3RS7135  
 -1

EP type number : 0 412 726 818

Governor

Governor design. : RQV325..1050PA848-20  
 K

Governor no. : 0 421 815 203

## Customer-spec. information

Customer : MACK

Engine : EM6 300 2VH

1st version kW : 224.0

Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm³/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm³ : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.40...1.60

2nd speed rpm : 450

travel mm : 2.50...2.80

3rd speed rpm : 800

travel mm : 4.80...5.00

4th speed rpm : 1050

travel mm : 7.30...7.60

5th speed rpm : 1200

travel mm : 9.40...9.60

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 900  
Del.quantity : 199.0...201.0  
1000 : (196.0...204.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 11.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 275  
Minimum rack trave: 6.30  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 325...600

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 630  
Rack travel in m: 13.00...13.10  
3rd speed rpm : 500  
Rack travel in m: 0.00...12.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 630  
Pressure hPa : 900  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 630

1st pressure hPa : -  
Rack travel in m: 7.80...8.20  
2nd pressure hPa : 190  
Rack travel in m: 9.10...9.20

3rd pressure hPa : 410  
Rack travel in m: 11.40...11.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 630  
Del.quantity cm<sup>3</sup>/ : 213.0...219.0  
1000 s: (210.0...222.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 121.0...125.0  
1000 s: (119.0...127.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 110.0...150.0  
1000 s: (100.0...160.0)  
Rack travel in mm : 7.80...8.20

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.0...3.2 mm.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 c 2

Edition : 29.04.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 745 801

## Injection pump

Pump designation : PE5SP120A720LS7101

EP type number : 0 412 725 800

## Governor

Governor design. : RQV300..1050PA759

Governer no. : 0 421 813 489

## Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM429 LA

## TEST BENCH REQUIREMENTS

### Test oil

inlet temp. °C : 38...42

### Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

### Overflow

quantity min. 1/h: 100...110

### Test nozzle holder

assembly : 1 688 901 019

### Opening

pressure, bar : 207...210

### Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

### Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

## (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.80...13.90

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 650

travel mm : 5.10...5.40

3rd speed rpm : 1100

travel mm : 7.90...8.30

4th speed rpm : 1180

travel mm : 9.50...10.00

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.10...17.90

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20

#### CONSTANT REGULATION

Speed rpm : 300...400

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : 240  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 350  
Rack travel in m: 13.30...13.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 197.0...201.0  
1000 s: (194.0...204.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 204.0...208.0  
1000 s: (201.0...211.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 157.0...159.0  
1000 s: (154.0...162.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (156.0...184.0)

#### Remarks:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 c 1  
 Edition : 03.04.87  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 745 802

Injection pump  
 Pump designation : PE5SP120A720LS7101  
 EP type number : 0 412 725 800  
 Governor  
 Governor design. : RQ300/1050PA690-1  
 Governer no. : 0 421 801 392

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM429 LA

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...110

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.50...12.60

Del.quantity cm³/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 179.0...181.0

1000 : (176.0...184.0)

Spread cm³ : 5.00

1000 : (9.00)

## RATED SPEED

## 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

## Testing:

1st rack travel in: 11.50

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1135...1175

4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 240  
Rack travel in m: 12.10...12.20  
2nd pressure hPa : 350  
Rack travel in m: 12.30...12.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 179.0...185.0  
1000 s: (176.0...188.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 157.0...159.0  
1000 s: (154.0...162.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1095...1110  
STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...180.0  
1000 s: (156.0...184.0)

Remarks:  
:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 g

Edition : 11.03.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 745 803

Injection pump

Pump designation : PE5SP120A720LS7152

EP type number : 0 412 725 801

Governor

Governor design. : RQ300/1050PA690-2

Governer no. : 0 421 801 427

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM429 LA

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.70...13.80

Del.quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70

Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.30...6.60  
Rack travel in mm : 2.00  
Speed rpm : 365...405

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.20...11.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 11.40...11.50  
2nd pressure hPa : 500  
Rack travel in m: 12.70...12.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 800  
Speed rpm : 600  
Del.quantity cm3/ : 204.0...210.0  
1000 s: (201.0...213.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 135.0...137.0  
1000 s: (132.0...140.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

#### Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 r  
 Edition : 15.08.89  
 Replaces : 8.5.89  
 Test oil : ISO-4113

Combination no. : 0 402 745 807

Injection pump  
 Pump designation : PE5SP120A720LS7174  
 EP type number : 0 412 725 806  
 Governor  
 Governor design. : RQ300/1050PA774-2  
 Governer no. : 0 421 801 450

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kW : 184.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm<sup>3</sup>/

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...7.0

Del.quantity cm<sup>3</sup>/

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 13.40  
 Speed rpm : 1095...1110  
 2nd rack travel in: 4.00  
 Speed rpm : 1170...1200  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.50

LOW IDLE 1  
 Setting point w/out bumper spring  
 Speed rpm : 300  
 Rack travel in mm : 6.7

Testing:  
 Speed rpm : 200  
 Minimum rack trave: 8.70  
 Speed rpm : 300  
 Rack travel in mm : 6.40...7.00  
 Rack travel in mm : 2.00  
 Speed rpm : 485...525

TORQUE CONTROL  
 Torque control curve - 1st version  
 1st speed rpm : 1050  
 Rack travel in m: 14.40...14.60  
 2nd speed rpm : 750  
 Rack travel in m: 14.90...15.10

Aneroid/Altitude  
 Compensator Test

1st version  
 Setting  
 Speed rpm : 600  
 Pressure hPa : 650  
 Rack travel mm : 14.10...14.30

Measurement  
 Speed 1/min : 600  
 1st pressure hPa : 250  
 Rack travel in m: 12.20...12.40  
 2nd pressure hPa : 400  
 Rack travel in m: 13.50...13.70  
 3rd pressure hPa : 750  
 Rack travel in m: 14.20...14.30 \*  
 4th pressure hPa : 850  
 Rack travel in m: 14.60...14.80  
 5th pressure hPa : -  
 Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
 Aneroid pressure h: 1200  
 Speed rpm : 1050  
 Del.quantity cm3/ : 208.0...211.0  
 1000 s: (205.0...214.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0);  
 Aneroid pressure h: 1200  
 Speed rpm : 750  
 Del.quantity cm3/ : 216.0...220.0  
 1000 s: (213.0...223.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm3/ : 150.0...152.0  
 1000 s: (147.0...155.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)

#### BREAKAWAY

1st version  
 1mm rack travel less than  
 full load rack tr: 13.40  
 Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 220.0...240.0  
 1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with  
 respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 v  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 745 808

Injection pump  
 Pump designation : PESSP120A720LS7175  
 EP type number : 0 412 725 807  
 Governor  
 Governor design. : RQ300/1050PA774-4  
 Governer no. : 0 421 801 453

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm<sup>3</sup>/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 235.0...237.0

1000 : (232.0...240.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

### Testing:

1st rack travel in: 12.00  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

### Testing:

Speed rpm : 200  
Minimum rack trave: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.60...5.90  
Rack travel in mm : 2.00  
Speed rpm : 370...410

### TORQUE CONTROL

Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.00...13.20  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60

### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

### Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 450  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1125  
Rack travel in m: 14.10...14.30  
5th pressure hPa : -  
Rack travel in m: 10.00...10.40

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1050  
Del.quantity cm3/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm3/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1095...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

### Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 m 2  
 Edition : 16.06.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 745 809

**Injection pump**  
 Pump designation : PE5SP120A720LS7160  
 EP type number : 0 412 725 802  
 Governor  
 Governor design. : RQV300..1050PA797-8  
 Governer no. : 0 421 813 756

## Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kW : 184.0

Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del.quantity cm<sup>3</sup>/

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.3

Del.quantity cm<sup>3</sup>/

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 1.10...1.30
2nd speed	rpm	: 600
travel mm		: 4.90...5.10
3rd speed	rpm	: 800
travel mm		: 5.80...6.10
4th speed	rpm	: 1100
travel mm		: 8.20...8.60
5th speed	rpm	: 1175
travel mm		: 9.50...10.10

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 650  
Del.quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 12.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 16...24

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.70...6.30

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.60...13.80  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.20

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 13.10...13.30

Measurement  
Speed 1/min : 600

1st pressure hPa : 250  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 400  
Rack travel in m: 12.50...12.70

3rd pressure hPa : 750  
Rack travel in m: 13.20...13.30 \*  
4th pressure hPa : 850  
Rack travel in m: 13.60...13.80  
5th pressure hPa : -  
Rack travel in m: 10.80...11.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 208.0...211.0  
1000 s: (205.0...214.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 o 2  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 745 810

Injection pump  
 Pump designation : PE55P120A720LS7163  
 EP type number : 0 412 725 803  
 Governor  
 Governor design. : RQV300..1050PA797-9  
 Governer no. : 0 421 813 757

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version KW : 221.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.30

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 800

travel mm : 5.80...6.10

4th speed rpm : 1100

travel mm : 8.20...8.60

5th speed rpm : 1175

travel mm : 9.50...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 800  
 Del.quantity : 235.0...237.0  
 1000 : (232.0...240.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

#### RATED SPEED

1st version  
 Control lever  
 position degrees: 52...60

Testing:  
 1st rack travel in: 12.00  
 Speed rpm : 1090...1100  
 2nd rack travel in: 4.00  
 Speed rpm : 1150...1180  
 4th rack travel in: 1250  
 Speed rpm : 0.00...1.00

LOW IDLE 1  
 Control lever  
 position degrees: 16...24

Testing:  
 Speed rpm : 200  
 Minimum rack trave: 8.00  
 Speed rpm : 300  
 Rack travel in mm : 5.60...5.90

CONSTANT REGULATION  
 Speed rpm : 300...400

TORQUE CONTROL  
 Dimension a mm : 0.40  
 Torque control curve - 1st version  
 1st speed rpm : 1050  
 Rack travel in m: 13.00...13.20  
 2nd speed rpm : 750  
 Rack travel in m: 14.40...14.60

#### Aneroid/Altitude Compensator Test

1st version  
 Setting  
 Speed rpm : 600  
 Pressure hPa : 800  
 Rack travel mm : 13.60...13.80

Measurement  
 Speed 1/min : 600

1st pressure hPa : 200  
 Rack travel in m: 11.00...11.20  
 2nd pressure hPa : 450  
 Rack travel in m: 13.00...13.20

3rd pressure hPa : 1000  
 Rack travel in m: 13.70...13.80 \*  
 4th pressure hPa : 1125  
 Rack travel in m: 14.10...14.30  
 5th pressure hPa : -  
 Rack travel in m: 10.00...10.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
 Aneroid pressure h: 1400  
 Speed rpm : 1050  
 Del.quantity cm<sup>3</sup>/ : 228.0...231.0  
 1000 s: (225.0...234.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: 1400  
 Speed rpm : 750  
 Del.quantity cm<sup>3</sup>/ : 250.0...254.0  
 1000 s: (247.0...257.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
 1000 s: (143.0...151.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)

#### BREAKAWAY

1st version  
 1mm rack travel less than  
 full load rack tr: 12.00  
 Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
 1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 9,0 c  
 Edition : 19.05.88  
 Replaces : 15.5.87  
 Test oil : ISO-4113

Combination no. : 0 402 746 801

Injection pump  
 Pump designation : PE6P120A320RS7103  
 EP type number : 0 412 626 805  
 Governor  
 Governor design. : RQV200...1100PA712  
 Governer no. : 0 421 813 442

Customer-spec. information  
 Customer : SAAB-SCANIA

Engine : DSC9 01

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)

Rack travel in mm : 6.00...8.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.00...12.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 1.00...1.70

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 17.8...18.0

100 s: (17.5...18.3)

Spread cm<sup>3</sup> : 0.7

100 s: (1.0)

2nd speed rpm : 225.0

Rack travel in mm : 4.6...4.8

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 1.10...1.50

2nd speed rpm : 350  
 travel mm : 2.60...3.20

3rd speed rpm : 650  
 travel mm : 4.30...4.90

4th speed rpm : 1145  
 travel mm : 7.50...7.70

5th speed rpm : 1300  
 travel mm : 8.90...9.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version	Del. quantity cm <sup>3</sup> / : 177.0...185.0 1000 s: (175.0...187.0)
Speed rpm : 700	Aneroid pressure h: 900
Aneroid pressure h: 900	Del. quantity : 178.0...180.0
Del. quantity : 178.0...180.0	1000 : (175.0...183.0)
Spread cm <sup>3</sup> : 7.00	1000 : (10.00)
RATED SPEED	BREAKAWAY
1st version	1st version
Control lever	1mm rack travel less than
position degrees: 59...67	full load rack tr: 11.50
Testing:	Speed rpm : 1140...1150
1st rack travel in: 11.50	STARTING FUEL DELIVERY
Speed rpm : 1140...1150	Speed rpm : 100
2nd rack travel in: 4.00	Del. quantity cm <sup>3</sup> / : 240.0...290.0
Speed rpm : 1285...1315	1000 s: (-)
4th rack travel in: 1450	Rack travel in mm : 20.00...21.00
Speed rpm : 0.00...1.00	LOW IDLE
LOW IDLE 1	Speed rpm : 225
Control lever	Rack travel in mm : 4.60...4.80
position degrees: 6...14	Del. quantity cm <sup>3</sup> / : 15.0...19.0
Testing:	Spread cm <sup>3</sup> : 3.00
Speed rpm : 100	1000 s: (6.00)
Minimum rack trave: 6.10	Remarks:
Speed rpm : 225	:
Rack travel in mm : 4.60...4.80	Delivery-valve spring pre-tension
Rack travel in mm : 2.00	3.2...3.4 mm.
Speed rpm : 295...355	Permissible alteration of 3.0...3.5 mm
Aneroid/Altitude Compensator Test	Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.
1st version	ADDITIONAL INFORMATION
Setting	Check and set without ROBO diaphragam
Speed rpm : 500	For comb. with letter index see VDT-I-400/116.
Pressure hPa : 900	For sealing see VDT-I-400/117.
Rack travel mm : 12.50...12.60	Scania test specifications taken over on Oct. 4, 1984
Measurement	Start of delivery - engine: 18° before TDC at control-rod travel = 6.00...8.00 mm
Speed 1/min : 500	
1st pressure hPa : -	
Rack travel in m: 10.20...10.30	
2nd pressure hPa : 435	
Rack travel in m: 11.90...12.00	
3rd pressure hPa : 335	
Rack travel in m: 10.70...10.90	
FUEL DELIVERY CHARACTERISTICS	
1st version	
Aneroid pressure h: 900	
Speed rpm : 1100	

Firing sequence of engine:  
1-5-3-6-2-4.



## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 a 1  
 Edition : 07.03.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 806

Injection pump  
 Pump designation : PES6P120A720LS7114  
 EP type number : 0 412 726 802  
 Governor  
 Governor design. : RQ300/950PA774-1  
 Governer no. : 0 421 801 419

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447LA

1st version kW : 350.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.40...14.60

Del.quantity cm<sup>3</sup>/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.3

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 750

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70  
Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack trave: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.00...6.30  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

2nd speed rpm : 950  
Rack travel in m: 13.70...13.90  
3rd speed rpm : 750  
Rack travel in m: 14.90...15.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.40...14.60

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 500  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 920  
Rack travel in m: 14.50...14.70  
4th pressure hPa : -  
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300  
Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 232.0...236.0  
1000 s: (229.0...239.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 f  
 Edition : 08.06.88  
 Replaces : 31.7.87  
 Test oil : ISO-4113

Combination no. : 0 402 746 808

Injection pump  
 Pump designation : PES6P120A720LS7107  
 EP type number : 0 412 726 801  
 Governor  
 Governor design. : RQ300/1100PA805  
 Governer no. : 0 421 801 352

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447na

1st version kW : 206.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 750

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.00...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : 230  
Rack travel in m: 11.30...11.50  
2nd pressure hPa : 370  
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750  
Speed rpm : 600  
Del.quantity cm3/ : 193.0...196.0  
1000 s: (190.0...199.0)  
Spread cm3 : 8.00  
1000 s: (12.)  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 a  
 Edition : 08.04.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 810

Injection pump  
 Pump designation : PES6P120A720RS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...900PA848K  
 Governer no. : 0 421 815 168

## Customer-spec. information

Customer : MACK

Engine : E6-350 4VH

1st version kW : 261.0

Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.30...10.70  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del.quantity cm<sup>3</sup>/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.0...4.2

Del.quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed	rpm	: 325
travel mm		: 1.20...1.40
2nd speed	rpm	: 450
travel mm		: 3.10...3.30
3rd speed	rpm	: 850
travel mm		: 5.90...6.10
4th speed	rpm	: 1000
travel mm		: 7.50...7.70

### GUIDE SLEEVE POSITION

Control-lever position		
Degree:	-1	
Speed	rpm	: 1130
Rack travel in mm		: 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed	rpm	: 900
Aneroid pressure h:	900	
Del.quantity		: 233.0...235.0
1000		: (230.0...238.0)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 12.90  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack trave: 5.50  
Speed rpm : 325  
Rack travel in mm : 4.00...4.20

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 625  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 800  
Rack travel in m: 14.00...14.10  
4th speed rpm : 500  
Rack travel in m: 0.00...13.50

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 625  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

Measurement  
Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 275  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 570  
Rack travel in m: 12.30...12.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 625  
Del.quantity cm<sup>3</sup>/ : 254.0...260.0  
1000 s: (251.0...263.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (134.0...142.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (130.0...190.0)  
Rack travel in mm : 8.30...8.70

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.00...4.20  
Del.quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a1

Edition : 08.04.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 814

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA848-1K

Governer no. : 0 421 815 169

Customer-spec. information

Customer : MACK

Engine : E6-300 4VH

1st version kW : 224.0

Rated speed : 1700

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values   

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
     Rack travel in mm : 10.30...10.70  
     Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 200.5...202.5

1000 : (197.5...205.5)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 11.90  
Speed rpm : 900...910  
2nd rack travel in: 4.00  
Speed rpm : 1025...1055  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack trave: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50  
3rd speed rpm : 600  
Rack travel in m: 13.50...13.70  
4th speed rpm : 500  
Rack travel in m: 0.00...13.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.50...13.70

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.40...9.80  
2nd pressure hPa : 280  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 510  
Rack travel in m: 12.20...12.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 217.0...223.0  
1000 s: (214.0...226.0)  
Aneroid pressure h: 900  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 233.0...239.0  
1000 s: (230.0...242.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 147.0...151.0  
1000 s: (145.0...153.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 900...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...210.0  
1000 s: (160.0...220.0)  
Rack travel in mm : 9.40...9.80

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11.1 a2  
 Edition : 15.04.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 815

Injection pump  
 Pump designation : PES6P120A720RS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...850PA848-2K  
 Governer no. : 0 421 815 170

## Customer-spec. information

Customer : MACK

Engine : E6-275 4VH

1st version kW : 202.0

Rated speed : 1700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 (2.70...2.90)  
 Rack travel in mm : 10.30...10.70  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 179.0...181.0

1000 : (176.0...184.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 11.00  
Speed rpm : 900...910  
2nd rack travel in: 4.00  
Speed rpm : 1025...1055  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack trave: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 700  
Rack travel in m: 12.50...12.70  
4th speed rpm : 500  
Rack travel in m: 0.00...12.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.90  
2nd pressure hPa : 215  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 360  
Rack travel in m: 11.50...11.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 209.0...215.0  
1000 s: (206.0...218.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 144.0...148.0  
1000 s: (142.0...150.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 900...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...200.0  
1000 s: (150.0...210.0)  
Rack travel in mm : 9.50...9.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11.1 a3

Edition : 07.01.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 816

## Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

## Governor

Governor design. : RQV325...875PA848-3K

Governor no. : 0 421 815 171

## Customer-spec. information

Customer : MACK

Engine : EM6-250L 4VH

1st version kW : 186.0

Rated speed : 1750

## TEST BENCH REQUIREMENTS

## Test oil

inlet temp. °C : 38...42

## Overflow valve

: 2 417 413 011

Inlet press., bar : 1.50

## Test nozzle holder

assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
(2.70...2.90)  
Rack travel in mm : 10.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm<sup>3</sup>/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

#### Testing:

1st rack travel in: 9.80  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 275  
Minimum rack trave: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 510  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 600  
Rack travel in m: 12.40...12.60  
4th speed rpm : 700  
Rack travel in m: 11.70...11.90  
5th speed rpm : 550  
Rack travel in m: 0.00...13.10

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.20

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 215  
Rack travel in m: 10.30...10.40

3rd pressure hPa : 435  
Rack travel in m: 12.20...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm<sup>3</sup>/ : 237.0...243.0  
1000 s: (234.0...246.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 146.0...150.0  
1000 s: (144.0...152.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...205.0  
1000 s: (155.0...215.0)  
Rack travel in mm : 9.20...9.40

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11.1 a4

Edition : 12.11.87

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 817

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...900PA848-4K

Governor no. : 0 421 815 173

Customer-spec. information

Customer : MACK

Engine : EC6-350 4VH

1st version kW : 261.0

Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 10.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.60...14.70

Del.quantity cm<sup>3</sup>/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.10...3.30

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.50...7.70

### GUIDE SLEEVE POSITION

Control-lever position

Degree: 63...65

Speed rpm : 1130

Rack travel in mm : 6.50...8.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread      cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 13.60  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack trave: 6.60  
Speed rpm : 325  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.60...14.70  
2nd speed rpm : 625  
Rack travel in m: 15.10...15.20  
3rd speed rpm : 800  
Rack travel in m: 14.80...14.90  
4th speed rpm : 500  
Rack travel in m: 0.00...14.50

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 625  
Pressure hPa : 1200  
Rack travel mm : 15.10...15.20

Measurement  
Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 280  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 650  
Rack travel in m: 13.30...13.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm<sup>3</sup>/ : 262.0...268.0  
1000 s: (259.0...271.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 130.5...134.5  
1000 s: (128.5...136.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.60  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...190.0  
1000 s: (140.0...200.0)  
Rack travel in mm : 8.90...9.10

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11.1 a5  
 Edition : 12.11.87  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 818

Injection pump  
 Pump designation : PES6P120A720RS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...875PA848-SK  
 Governer no. : 0 421 815 174

## Customer-spec. information

Customer : MACK

Engine : EM6-275L 4VH

1st version kW : 202.0

Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del.quantity cm<sup>3</sup>/ : 3.7...4.3

100 s: (3.5...4.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed	rpm	: 325
	travel mm	: 1.20...1.40
2nd speed	rpm	: 450
	travel mm	: 2.80...3.10
3rd speed	rpm	: 850
	travel mm	: 6.20...6.40
4th speed	rpm	: 1000
	travel mm	: 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 63...65

Speed rpm : 1085

Rack travel in mm : 8.00...10.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 187.0...189.0

1000 : (184.0...192.0)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 52...60

Testing:

1st rack travel in: 11.20  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1030...1050  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

Testing:

Speed rpm : 275  
Minimum rack trave: 6.20  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 875  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 510  
Rack travel in m: 14.10...14.30  
3rd speed rpm : 700  
Rack travel in m: 13.20...13.40  
4th speed rpm : 400  
Rack travel in m: 0.00...13.80

#### Aneroid/Altitude Compensator Test

1st version

Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 14.10...14.30

#### Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 8.50...8.70

2nd pressure hPa : 330

Rack travel in m: 9.90...10.00

3rd pressure hPa : 685

Rack travel in m: 12.50...12.90

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm<sup>3</sup>/ : 260.0...266.0  
1000 s: (257.0...269.0)

Spread      cm<sup>3</sup> : 8.00  
              1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 131.0...135.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (130.0...190.0)  
Rack travel in mm : 8.50...8.70

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del.quantity cm<sup>3</sup>/ : 37.0...43.0  
1000 s: (35.0...45.0)  
Spread      cm<sup>3</sup> : 8.00  
              1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11\_1 a6  
 Edition : 07.01.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 819

## Injection pump

Pump designation : PES6P120A720RS713S  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...875PA848-6K  
 Governer no. : 0 421 815 175

## Customer-spec. information

Customer : MACK

Engine : EM6-225L 4VH

1st version kW : 165.0

Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm	: 2.75...2.85
	: (2.70...2.90)
Rack travel in mm	: 10.50...10.50
Firing order	: 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 15.6...15.8

100 s: (15.3...16.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del.quantity cm<sup>3</sup>/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 2.80...3.10

3rd speed rpm : 850  
 travel mm : 6.20...6.40

4th speed rpm : 1000  
 travel mm : 7.70...7.90

### GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1110

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 875

Aneroid pressure h: 900

Del.quantity : 156.0...158.0

1000 : (153.0...161.0)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 52...60

##### Testing:

1st rack travel in: 10.00  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1015...1045  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

##### Testing:

Speed rpm : 275  
Minimum rack trave: 6.10  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 510  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 600  
Rack travel in m: 12.50...12.70  
4th speed rpm : 700  
Rack travel in m: 11.80...12.00  
5th speed rpm : 350  
Rack travel in m: 0.00...13.20

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 900  
Rack travel mm : 13.20...13.40

##### Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 220

Rack travel in m: 9.70...9.80

3rd pressure hPa : 500  
Rack travel in m: 12.00...12.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 510  
Del.quantity cm<sup>3</sup>/ : 232.0...238.0  
1000 s: (229.0...241.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 131.0...135.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (125.0...185.0)  
Rack travel in mm : 8.50...8.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del.quantity cm<sup>3</sup>/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks .

Test sheet : MAC 11.1 b5  
Edition : 15.04.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 820

Injection pump  
Pump designation : PES6P120A720RS7135  
EP type number : 0 412 726 807  
Governor  
Governor design. : RQV325...850PA87BK  
Governor no. : 0 421 815 177

Customer-spec. information  
Customer : MACK

Engine : E6-275 4VH

1st version kW : 202.0  
Rated speed : 1700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40  
2nd speed rpm : 450  
travel mm : 2.80...3.10  
3rd speed rpm : 850  
travel mm : 6.20...6.40  
4th speed rpm : 1000  
travel mm : 7.70...7.90

### GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1110  
Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 850  
Aneroid pressure h: 900  
Del.quantity : 179.0...181.0  
1000 : (176.0...184.0)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 11.00  
Speed rpm : 900...910  
2nd rack travel in: 4.00  
Speed rpm : 1025...1055  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack trave: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 700  
Rack travel in m: 12.50...12.70  
4th speed rpm : 500  
Rack travel in m: 0.00...12.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.90  
2nd pressure hPa : 215  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 360  
Rack travel in m: 11.50...11.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 209.0...215.0  
1000 s: (206.0...218.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 144.0...148.0  
1000 s: (142.0...150.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 900...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...200.0  
1000 s: (150.0...210.0)  
Rack travel in mm : 9.50...9.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 b  
 Edition : 08.04.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 821

Injection pump  
 Pump designation : PES6P120A720RS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...850PA878-1K  
 Governor no. : 0 421 815 178

## Customer-spec. information

Customer : MACK

Engine : E6-300 4VH

1st version kW : 224.0

Rated speed : 1700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.30...10.70  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 200.5...202.5

1000 : (197.5...205.5)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 11.90  
Speed rpm : 900...910  
2nd rack travel in: 4.00  
Speed rpm : 1025...1055  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack trave: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50  
3rd speed rpm : 600  
Rack travel in m: 13.50...13.70  
4th speed rpm : 500  
Rack travel in m: 0.00...13.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.50...13.70

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.40...9.80  
2nd pressure hPa : 280  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 510  
Rack travel in m: 12.20...12.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 217.0...223.0  
1000 s: (214.0...226.0)  
Aneroid pressure h: 900  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 233.0...239.0  
1000 s: (230.0...242.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 147.0...151.0  
1000 s: (145.0...153.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 900...910

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...210.0  
1000 s: (160.0...220.0)  
Rack travel in mm : 9.40...9.80

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11.1 b1

Edition : 08.04.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 822

## Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

## Governor

Governor design. : RQV325...900PA878-2K

Governer no. : 0 421 815 179

## Customer-spec. information

Customer : MACK

Engine : E6-350 4VH

1st version kW : 261.0

Rated speed : 1800

## TEST BENCH REQUIREMENTS

### Test oil

inlet temp. °C : 38...42

### Overflow valve

: 2 417 413 011

Inlet press., bar : 1.50

### Test nozzle holder

assemb'y : 1 688 901 101

### Opening

pressure, bar : 207...210

### Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

### Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

### (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 10.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del.quantity cm<sup>3</sup>/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.0...4.2

Del.quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.10...3.30

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.50...7.70

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 12.90  
Speed rpm : 950...960  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 275  
Minimum rack trave: 5.50  
Speed rpm : 325  
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION  
Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 625  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 800  
Rack travel in m: 14.00...14.10  
4th speed rpm : 500  
Rack travel in m: 0.00...13.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 625  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

Measurement  
Speed 1/min : 625

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 275  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 570  
Rack travel in m: 12.30...12.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 625  
Del.quantity cm<sup>3</sup>/ : 254.0...260.0  
1000 s: (251.0...263.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (134.0...142.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
Full load rack tr: 12.90  
Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (130.0...190.0)  
Rack travel in mm : 8.30...8.70

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.00...4.20  
Del.quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11.1 b2

Edition : 02.11.87

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 823

## Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

## Governor

Governor design. : RQV325...87SPA878-3K

Governor no. : 0 421 815 180

## Customer-spec. information

Customer : MACK

Engine : EM6-275L 4VH

1st version kW : 202.0

Rated speed : 1750

## TEST BENCH REQUIREMENTS

### Test oil

inlet temp. °C : 38...42

### Overflow valve

: 2 417 413 011

Inlet press., bar : 1.50

### Test nozzle holder

assembly : 1 688 901 101

### Opening

pressure, bar : 207...210

### Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

### Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

### (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm	:	2.75...2.85
	:	(2.70...2.90)
Rack travel in mm	:	10.50...10.50
Firing order	:	1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del.quantity cm<sup>3</sup>/ : 3.7...4.3

100 s: (3.5...4.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.30...1.50

2nd speed rpm : 450

travel mm : 2.60...2.90

3rd speed rpm : 600

travel mm : 3.80...4.00

4th speed rpm : 850

travel mm : 6.50...6.70

5th speed rpm : 1000

travel mm : 8.70...8.90

### GUIDE SLEEVE POSITION

Control-lever position

Degree: 65

Speed rpm : 1030

Rack travel in mm : 8.00...10.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 187.0...189.0  
1000 : (184.0...192.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 54...62

#### Testing:

1st rack travel in: 11.20  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 985...1015  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 275  
Minimum rack trave: 6.20  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 510  
Rack travel in m: 14.20...14.30  
3rd speed rpm : 700  
Rack travel in m: 13.20...13.30  
4th speed rpm : 550  
Rack travel in m: 0.00...14.30

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 14.20...14.30

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 330  
Rack travel in m: 10.20...10.30

3rd pressure hPa : 685  
Rack travel in m: 12.80...13.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm<sup>3</sup>/ : 260.0...266.0  
1000 s: (257.0...269.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 131.0...135.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (130.0...190.0)  
Rack travel in mm : 8.80...9.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del.quantity cm<sup>3</sup>/ : 37.0...43.0  
1000 s: (35.0...45.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11.1 b3  
 Edition : 07.01.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 824

**Injection pump**  
 Pump designation : PES6P120A720RS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325...875PA878-4K  
 Governor no. : 0 421 815 181

## Customer-spec. information

Customer : MACK

Engine : EM6-225L 4VH

1st version kW : 165.0

Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 15.6...15.8

100 s: (15.3...16.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del.quantity cm<sup>3</sup>/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 875

Aneroid pressure h: 900

Del.quantity : 156.0...158.0

1000 : (153.0...161.0)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 52...60

##### Testing:

1st rack travel in: 10.00  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1015...1045  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

##### Testing:

Speed rpm : 275  
Minimum rack trave: 6.10  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 510  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 600  
Rack travel in m: 12.50...12.70  
4th speed rpm : 700  
Rack travel in m: 11.80...12.00  
5th speed rpm : 350  
Rack travel in m: 0.00...13.20

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 900  
Rack travel mm : 13.20...13.40

##### Measurement

Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.50...8.90  
2nd pressure hPa : 220  
Rack travel in m: 9.70...9.80

3rd pressure hPa : 500  
Rack travel in m: 12.00...12.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 510  
Del.quantity cm<sup>3</sup>/ : 232.0...238.0  
1000 s: (229.0...241.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 131.0...135.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (125.0...185.0)  
Rack travel in mm : 8.50...8.90

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Del.quantity cm<sup>3</sup>/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11.1 b4

Edition : 07.01.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 826

## Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

## Governor

Governor design. : RQV325...87SPA878-6K

Governor no. : 0 421 815 183

## Customer-spec. information

Customer : MACK

Engine : EM6-250L 4VH

1st version kW : 186.0

Rated speed : 1750

## TEST BENCH REQUIREMENTS

### Test oil

inlet temp. °C : 38...42

### Overflow valve

: 2 417 413 011

Inlet press., bar : 1.50

### Test nozzle holder

assembly : 1 688 901 101

### Opening

pressure, bar : 207...210

### Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

### Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

### (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm<sup>3</sup>/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread      cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 9.80  
Speed rpm : 925...935  
2nd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 275  
Minimum rack trave: 1.50  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 510  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 600  
Rack travel in m: 12.40...12.60  
4th speed rpm : 700  
Rack travel in m: 11.70...11.90  
5th speed rpm : 550  
Rack travel in m: 0.00...13.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.20

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 215  
Rack travel in m: 10.30...10.40

3rd pressure hPa : 435  
Rack travel in m: 12.20...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm<sup>3</sup>/ : 237.0...243.0  
1000 s: (234.0...246.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 146.0...150.0  
1000 s: (144.0...152.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 925...935

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...205.0  
1000 s: (155.0...215.0)  
Rack travel in mm : 9.20...9.40

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11.1 a7  
 Edition : 07.01.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 829

Injection pump  
 Pump designation : PES6P120A720RS7135  
 EP type number : 0 412 726 807  
 Governor  
 Governor design. : RQV325..1050PA848-8K  
 Governer no. : 0 421 815 185

## Customer-spec. information

Customer : MACK

Engine : E6-270 4VH

1st version kW : 201.0

Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values   

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 17.4...17.6

100 s: (17.1...17.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.40...1.60

2nd speed rpm : 450

travel mm : 2.50...2.80

3rd speed rpm : 800

travel mm : 4.80...5.00

4th speed rpm : 1050

travel mm : 7.30...7.60

5th speed rpm : 1200

travel mm : 9.40...9.60

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1210

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del. quantity : 174.0...176.0  
1000 : (171.0...179.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 275  
Minimum rack trave: 1.50  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

#### CONSTANT REGULATION

Speed rpm : 325...600

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 630  
Rack travel in m: 12.00...12.10  
3rd speed rpm : 925  
Rack travel in m: 11.90...12.10  
4th speed rpm : 800  
Rack travel in m: 12.20...12.40

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 630  
Pressure hPa : 900  
Rack travel mm : 12.00...12.10

Measurement  
Speed 1/min : 630

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 270  
Rack travel in m: 9.60...9.70

3rd pressure hPa : 400  
Rack travel in m: 11.00...11.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 630  
Del. quantity cm<sup>3</sup>/ : 188.0...194.0  
1000 s: (185.0...197.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 129.0...133.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (125.0...185.0)  
Rack travel in mm : 8.80...9.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del. quantity cm<sup>3</sup>/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 f 1  
 Edition : 07.03.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 830

Injection pump  
 Pump designation : PES6P120A720LS7107  
 EP type number : 0 412 726 801  
 Governor  
 Governor design. : RGV350..1100PA886  
 Governer no. : 0 421 813 691

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447ha

1st version kW : 206.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.5

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed	rpm	: 350
	travel mm	: 2.20...2.40
2nd speed	rpm	: 580
	travel mm	: 3.80...4.20
3rd speed	rpm	: 1150
	travel mm	: 8.00...8.50
4th speed	rpm	: 1230
	travel mm	: 9.20...9.80

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1080

Aneroid pressure h: 750  
Del.quantity : 197.0...199.0  
1000 : (194.0...202.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 12.40  
Speed rpm : 1120...1130  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 250  
Minimum rack trave: 7.50  
Speed rpm : 350  
Rack travel in mm : 5.20...5.50

CONSTANT REGULATION  
Speed rpm : 350...550

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.70...11.00

Measurement  
Speed 1/min : 500

1st pressure hPa : 230  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 370  
Rack travel in m: 12.40...12.60

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 750

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 196.0...200.0  
1000 s: (193.0...203.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1120...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a8

Edition : 06.04.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 832

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...900PA848-10

K

Governer no. : 0 421 815 189

Customer-spec. information

Customer : MACK

Engine : EM6 275 2VH

1st version kW : 202.0

Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
(2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del.quantity cm<sup>3</sup>/ : 3.7...4.3

100 s: (3.5...4.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.10...3.30

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.50...7.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del. quantity : 187.0...189.0  
 1000 : (184.0...192.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

#### RATED SPEED

1st version  
 Control lever  
 position degrees: 51...59

Testing:  
 1st rack travel in: 11.30  
 Speed rpm : 950...960  
 2nd rack travel in: 4.00  
 Speed rpm : 1055...1085  
 4th rack travel in: 1150  
 Speed rpm : 0.00...1.00

LOW IDLE 1  
 Control lever  
 position degrees: 9...17

Testing:  
 Speed rpm : 275  
 Minimum rack trave: 6.10  
 Speed rpm : 325  
 Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
 Speed rpm : 325...480

TORQUE CONTROL  
 Torque control curve - 1st version  
 1st speed rpm : 900  
 Rack travel in m: 12.30...12.40  
 2nd speed rpm : 540  
 Rack travel in m: 13.50...13.70  
 3rd speed rpm : 700  
 Rack travel in m: 12.70...12.90  
 4th speed rpm : 450  
 Rack travel in m: 0.00...13.30

Aneroid/Altitude  
 Compensator Test

1st version  
 Setting  
 Speed rpm : 540  
 Pressure hPa : 900  
 Rack travel mm : 13.50...13.60

Measurement  
 Speed 1/min : 540

1st pressure hPa : -  
 Rack travel in m: 9.10...9.20  
 2nd pressure hPa : 320  
 Rack travel in m: 10.20...10.30

3rd pressure hPa : 550  
 Rack travel in m: 12.00...12.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
 Aneroid pressure h: 900  
 Speed rpm : 540  
 Del.quantity cm<sup>3</sup>/ : 235.0...241.0  
 1000 s: (232.0...244.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: -  
 Speed rpm : 400  
 Del.quantity cm<sup>3</sup>/ : 142.0...146.0  
 1000 s: (140.0...148.0)

#### BREAKAWAY

1st version  
 1mm rack travel less than  
 full load rack tr: 11.30  
 Speed rpm : 950...960

#### STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm<sup>3</sup>/ : 150.0...190.0  
 1000 s: (140.0...200.0)  
 Rack travel in mm : 9.10...9.30

#### LOW IDLE

Speed rpm : 325  
 Rack travel in mm : 4.60...4.80  
 Del.quantity cm<sup>3</sup>/ : 37.0...43.0  
 1000 s: (35.0...45.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.00)

#### Remarks:

Delivery-valve spring pre-tension  
 3.2...3.4 mm.  
 Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11.1 a9

Edition : 07.03.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 833

## Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...975PA848-11

K

Governor no. : 0 421 815 190

## Customer-spec. information

Customer : MACK

Engine : E6-350 2VM

1st version kW : 257.0

Rated speed : 1950

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.30...10.70  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 14.10...14.20

Del.quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm<sup>3</sup>/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.40...1.60

2nd speed rpm : 450

travel mm : 2.50...2.80

3rd speed rpm : 800

travel mm : 4.80...5.00

4th speed rpm : 1050

travel mm : 7.30...7.60

5th speed rpm : 1200

travel mm : 9.40...9.60

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 900  
Del.quantity : 234.0...236.0  
1000 : (231.0...239.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 13.10  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 275  
Minimum rack trave: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 325...600

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 14.10...14.20  
2nd speed rpm : 700  
Rack travel in m: 13.80...13.90  
3rd speed rpm : 600  
Rack travel in m: 0.00...13.30

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 900  
Rack travel mm : 13.80...13.90

Measurement  
Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 7.80...8.00  
2nd pressure hPa : 240  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 510

Rack travel in m: 12.20...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 125.0...129.0  
1000 s: (123.0...131.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.10  
Speed rpm : 1015...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 110.0...150.0  
1000 s: (100.0...160.0)  
Rack travel in mm : 7.80...8.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 38.0...44.0  
1000 s: (36.0...46.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 a 2  
 Edition : 15.08.89  
 Replaces : 29.3.89  
 Test oil : ISO-4113

Combination no. : 0 402 746 841

Injection pump  
 Pump designation : PES6P120A720LS7114-2  
 EP type number : 0 412 726 815  
 Governor  
 Governor design. : RQ300/1050PA774-3  
 Governer no. : 0 421 801 451

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.20  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 14.20...14.40  
3rd speed rpm : 700  
Rack travel in m: 14.70...14.90

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 14.00...14.20

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 500  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 1100  
Rack travel in m: 14.20...14.40  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 10.40...10.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 1050

Del.quantity cm<sup>3</sup>/ s: 234.0...238.0  
1000 s: (231.0...341.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ s: 246.0...249.0  
1000 s: (243.0...252.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ s: 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ s: 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 a 3  
 Edition : 25.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 854

Injection pump  
 Pump designation : PES6P120A720LS7114-3  
 EP type number : 0 412 726 820  
 Governor  
 Governor design. : RQ300/1050PA911  
 Governer no. : 0 421 801 476

Customer-spec. information  
 Customer : DBAIMLER-BENZ

Engine : OM447 LA

1st version kW : 257.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

**Testing:**

1st rack travel in: 12.70  
 Speed rpm : 1095...1110  
 2nd rack travel in: 4.00  
 Speed rpm : 1170...1200  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.50

**LOW IDLE 1**

Setting point w/out bumper spring  
 Speed rpm : 300  
 Rack travel in mm : 6.0  
 Speed rpm : 300  
 Rack travel in mm : 5.80...6.20  
 Rack travel in mm : 2.00  
 Speed rpm : 360...400

**TORQUE CONTROL**

Dimension a mm : ?  
 2nd speed rpm : 1050  
 Rack travel in m: 13.60...13.80  
 3rd speed rpm : 700  
 Rack travel in m: 14.10...14.30

**Aneroid/Altitude Compensator Test**

1st version  
 Setting  
 Speed rpm : 600  
 Pressure hPa : 800  
 Rack travel mm : 13.60...13.80

Measurement  
 Speed 1/min : 600

1st pressure hPa : 300  
 Rack travel in m: 11.20...11.40  
 2nd pressure hPa : 600  
 Rack travel in m: 13.10...13.30  
 3rd pressure hPa : 1000  
 Rack travel in m: 13.70...13.80  
 4th pressure hPa : 1100  
 Rack travel in m: 13.90...14.10  
 5th pressure hPa : -  
 Rack travel in m: 10.20...10.50

**START CUT-OUT**

Speed 1/min : 220 (240)

**FUEL DELIVERY CHARACTERISTICS**

1st version  
 Aneroid pressure h: 1500  
 Speed rpm : 1050

Del.quantity cm<sup>3</sup>/ : 229.0...233.0  
 1000 s: (226.0...236.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: 1500  
 Speed rpm : 800  
 Del.quantity cm<sup>3</sup>/ : 244.0...247.0  
 1000 s: (241.0...250.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
 1000 s: (143.0...151.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.0)

**BREAKAWAY**

1st version  
 1mm rack travel less than  
 full load rack tr: 12.70  
 Speed rpm : 1095...1110

**STARTING FUEL DELIVERY**

Speed rpm : 100  
 Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
 1000 s: (236.0...264.0)

**Remarks:**

:  
 \* Increase in control-rod travel with respect to setting at least 0.1 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 e  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 855

Injection pump  
 Pump designation : PES6P120A720LS7176  
 EP type number : 0 412 726 821  
 Governor  
 Governor design. : RQ300/1050PA897  
 Governer no. : 0 421 801 452

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.6

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 200  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 400  
Rack travel in m: 13.20...13.40  
3rd pressure hPa : 800  
Rack travel in m: 14.20...14.30  
4th pressure hPa : -  
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SSC 10,5 f  
 Edition : 16.06.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 856

Injection pump  
 Pump designation : PES6P130A320LS7173  
 EP type number : 0 412 736 802  
 Governor  
 Governor design. : RQV300...750PA914  
 Governer no. : 0 421 813 747

Customer-spec. information  
 Customer : SSCM

Engine : UD25-L6

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.00x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 48.0...48.3

100 s: (47.6...48.6)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.3

Del.quantity cm3/ : 4.7...5.3

100 s: (4.3...5.7)

Spread cm3 : 1.0

100 s: (1.4)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.30

2nd speed rpm : 600

travel mm : 5.10...5.70

3rd speed rpm : 750

travel mm : 7.70...7.90

4th speed rpm : 1000

travel mm : 11.00...12.00

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 480.0...483.0

1000 : (476.5...486.5)

Spread cm3 : 6.00

1000 : (10.00)

## RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 11.30  
Speed rpm : 790...800  
2nd rack travel in: 4.00  
Speed rpm : 840...870

LOW IDLE 1

Control lever  
position degrees: 43...51  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 315...445

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 790...800

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

APPLICATION

Navy

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 9,5 a 1  
 Edition : 28.06.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 857

Injection pump  
 Pump designation : PES6P120A720RS7177  
 EP type number : 0 412 726 823  
 Governor  
 Governor design. : RQ275/1100PA915  
 Governer no. : 0 421 801 478

Customer-spec. information  
 Customer : IVECO-FIAT  
 Engine : 8460.41.601

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.30

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1350  
Speed rpm : 0.00...1.00

full load rack tr: 11.30  
Speed rpm : 1145...1160

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.8

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

#### APPLICATION

Omnibus

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.30  
Speed rpm : 275  
Rack travel in mm : 5.70...5.90

#### CONSTANT REGULATION

Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 600  
Rack travel in m: 12.60...12.80

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.80  
2nd pressure hPa : 320  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 270  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 f  
 Edition : 18.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 858

Injection pump  
 Pump designation : PES6P120A720LS7181  
 EP type number : 0 412 726 824  
 Governor  
 Governor design. : RQ300/1050PA911-1  
 Governer no. : 0 421 801 481

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 294.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Lube oil : 8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.20...15.40

Del.quantity cm³/ : 27.4...27.6

100 s: (27.1...27.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 274.0...276.0

1000 : (271.0...279.0)

Spread cm³ : 5.00

1000 : (9.00)

## RATED SPEED

## 1st version

### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

### Testing:

1st rack travel in: 13.90  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

### TORQUE CONTROL

Dimension a mm : 0.50  
2nd speed rpm : 1050  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 850  
Rack travel in m: 15.60...15.80

### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 15.20...15.40

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 700  
Rack travel in m: 14.00...14.20  
3rd pressure hPa : 1300  
Rack travel in m: 15.40...15.60  
4th pressure hPa : 1450  
Rack travel in m: 15.90...16.10  
5th pressure hPa : -  
Rack travel in m: 10.00...10.50

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm3/ : 269.0...272.0  
1000 s: (266.0...275.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 700  
Del.quantity cm3/ : 298.0...301.0  
1000 s: (295.0...304.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

1st version  
1mm rack travel less than .  
full load rack tr: 13.90  
Speed rpm : 1095...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 a 4  
 Edition : 16.06.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 859

Injection pump  
 Pump designation : PES6P120A720LS7114-2  
 EP type number : 0 412 726 815  
 Governor  
 Governor design. : RQV300..1050PA797-10  
 Governer no. : 0 421 813 758

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.30

2nd speed rpm : 600  
 travel mm : 4.90...5.10

3rd speed rpm : 800  
 travel mm : 5.90...6.20

4th speed rpm : 1100  
 travel mm : 8.10...8.50

5th speed rpm : 1175  
 travel mm : 9.70...10.20

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

**1st version**

Speed rpm : 600  
 Aneroid pressure hPa : 900  
 Del. quantity : 229.0...231.0  
     1000 s: (226.0...234.0)  
 Spread cm<sup>3</sup> : 5.00  
     1000 s: (9.00)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 53...61

**Testing:**

1st rack travel in: 13.20  
     Speed rpm : 1090...1100  
 2nd rack travel in: 4.00  
     Speed rpm : 1150...1180  
 4th rack travel in: 1250  
     Speed rpm : 0.00...1.00

**LOW IDLE 1**

Control lever  
 position degrees: 16...24

**Testing:**

Speed rpm : 200  
 Minimum rack travel: 8.00  
 Speed rpm : 300  
 Rack travel in mm : 5.80...6.20

**CONSTANT REGULATION**

Speed rpm : 300...450

**TORQUE CONTROL**

Dimension a mm : 0.50  
 2nd speed rpm : 1050  
     Rack travel in m: 14.20...14.40  
 3rd speed rpm : 700  
     Rack travel in m: 14.70...14.90

**Aneroid/Altitude Compensator Test****1st version**

Setting  
 Speed rpm : 600  
 Pressure hPa : 700  
 Rack travel mm : 14.00...14.20

**Measurement**

Speed 1/min : 600

1st pressure hPa : 300  
     Rack travel in m: 11.80...12.00  
 2nd pressure hPa : 500  
     Rack travel in m: 13.40...13.60  
 3rd pressure hPa : 1100

Rack travel in m: 14.20...14.40

4th pressure hPa : 1200

Rack travel in m: 14.50...14.70

5th pressure hPa : -

Rack travel in m: 10.40...10.70

**START CUT-OUT**

Speed 1/min : 220 (240)

**FUEL DELIVERY CHARACTERISTICS****1st version**

Aneroid pressure hPa : 1500  
 Speed rpm : 1050  
 Del. quantity cm<sup>3</sup>/s : 234.0...238.0  
     1000 s: (231.0...341.0)  
 Spread cm<sup>3</sup> : 8.00  
     1000 s: (12.0)  
 Aneroid pressure hPa : 1500  
 Speed rpm : 700  
 Del. quantity cm<sup>3</sup>/s : 246.0...249.0  
     1000 s: (243.0...252.0)  
 Spread cm<sup>3</sup> : 8.00  
     1000 s: (12.0)  
 Aneroid pressure hPa : -  
 Speed rpm : 500  
 Del. quantity cm<sup>3</sup>/s : 146.0...148.0  
     1000 s: (143.0...151.0)  
 Spread cm<sup>3</sup> : 8.00  
     1000 s: (12.0)

**BREAKAWAY****1st version**

1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 1090...1100

**STARTING FUEL DELIVERY**

Speed rpm : 100  
 Del. quantity cm<sup>3</sup>/s : 240.0...260.0  
     1000 s: (236.0...264.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12.0 d 2  
 Edition : 16.06.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 860

Injection pump  
 Pump designation : PES6P120A720LS7161  
 EP type number : 0 412 726 817  
 Governor  
 Governor design. : RQV300..1050PA797-11  
 Governer no. : 0 421 813 759

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.30

2nd speed rpm : 600  
 travel mm : 4.90...5.10

3rd speed rpm : 800  
 travel mm : 5.90...6.20

4th speed rpm : 1100  
 travel mm : 8.10...8.50

5th speed rpm : 1175  
 travel mm : 9.70...10.20

### GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 680  
Del.quantity : 201.0...203.0  
1000 : (198.0...206.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 12.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 16...24

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00

#### CONSTANT REGULATION

Speed rpm : 300...450

#### TORQUE CONTROL

Dimension a mm : 1.20  
2nd speed rpm : 1050  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 750  
Rack travel in m: 14.80...15.00

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.10...14.30

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 400  
Rack travel in m: 13.20...13.40  
3rd pressure hPa : 800

Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : -  
Rack travel in m: 11.50...11.80  
START CUT-OUT  
Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### Remarks:

:  
\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 16,0 a  
 Edition : 01.09.89  
 Replaces : 17.2.89  
 Test oil : ISO-4113

Combination no. : 0 402 748 802

Injection pump  
 Pump designation : PES8P120A920/4LS7159  
 EP type number : 0 412 728 801  
 Governor  
 Governor design. : RQV325..1050PA848-21  
 K  
 Governer no. : 0 421 815 201

## Customer-spec. information

Customer : MACK

Engine : EE9 502

1st version kW : 368.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

G08

Test pressure, bar: 22...24

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 2- 7- 8- 4- 5- 6-  
 3

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 630

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.30...1.60

2nd speed rpm : 450

travel mm : 2.30...2.70

3rd speed rpm : 800

travel mm : 4.40...4.80

4th speed rpm : 1050

travel mm : 6.90...7.10

5th speed rpm : 1200

travel mm : 8.90...9.20

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 7.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

**1st version**

Speed	rpm	: 630
Aneroid pressure h:		1200
Del.quantity		: 207.0...209.0
	1000	: (204.0...212.0)
Spread	cm <sup>3</sup>	: 5.00
	1000	: (9.00)

#### RATED SPEED

**1st version**  
Control lever  
position degrees: 57...65

#### Testing:

1st rack travel in:	12.10
Speed rpm	: 1095...1105
2nd rack travel in:	4.00
Speed rpm	: 1180...1210
4th rack travel in:	1300
Speed rpm	: 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm	: 275
Minimum rack trave:	6.30
Speed rpm	: 325
Rack travel in mm	: 4.80...5.00

#### CONSTANT REGULATION

Speed rpm	: 325...600
-----------	-------------

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm	: 630
Rack travel in m:	11.90...12.00
2nd speed rpm	: 1050
Rack travel in m:	13.10...13.30
3rd speed rpm	: 500
Rack travel in m:	0.00...11.30

#### Aneroid/Altitude Compensator Test

**1st version**

Setting	
Speed rpm	: 1050
Pressure hPa	: 1200
Rack travel mm	: 13.10...13.20

**Measurement**

Speed 1/min	: 1050
-------------	--------

1st pressure hPa : -  
Rack travel in m: 8.40...8.80  
2nd pressure hPa : 345

Rack travel in m: 9.90...10.00  
3rd pressure hPa : 725  
Rack travel in m: 12.00...12.40

#### START CUT-OUT

Speed 1/min	: 280 (290)
-------------	-------------

#### FUEL DELIVERY CHARACTERISTICS

**1st version**

Aneroid pressure h:	1200
Speed rpm	: 1050
Del.quantity cm <sup>3</sup> /	: 202.0...208.0
	1000 s: (199.0...211.0)
Spread cm <sup>3</sup>	: 10.00
	1000 s: (14.0)
Aneroid pressure h:	-
Speed rpm	: 400
Del.quantity cm <sup>3</sup> /	: 154.0...158.0
	1000 s: (152.0...160.0)

#### BREAKAWAY

**1st version**  
1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm	: 100
Del.quantity cm <sup>3</sup> /	: 140.0...180.0
	1000 s: (130.0...190.0)
Rack travel in mm	: 9.30...9.70

#### LOW IDLE

Speed rpm	: 325
Rack travel in mm	: 4.80...5.00
Del.quantity cm <sup>3</sup> /	: 40.0...46.0
	1000 s: (38.0...48.0)
Spread cm <sup>3</sup>	: 8.00
	1000 s: (12.00)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,0 c  
 Edition : 09.06.89  
 Replaces : 7.2.89  
 Test oil : ISO-4113

Combination no. : 0 402 776 805

Injection pump  
 Pump designation : PES6P120A720LS7155  
 EP type number : 0 412 726 812  
 Governor  
 Governor design. : RSV350..1050POA529-1  
 Governer no. : 0 421 833 295

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0

Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.5...4.8

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1400

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 12.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.6  
Speed rpm : 350  
Rack travel in mm : 4.50...4.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 825  
Rack travel in m: 14.10...14.30  
3rd speed rpm : 950  
Rack travel in m: 13.60...13.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 400  
Rack travel in m: 11.40...11.60  
3rd pressure hPa : 850  
Rack travel in m: 13.20...13.40  
4th pressure hPa : 950  
Rack travel in m: 13.70...13.90  
5th pressure hPa : -  
Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 650  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 234.0...237.0  
1000 s: (231.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 825  
Del.quantity cm<sup>3</sup>/ : 263.0...266.0  
1000 s: (260.0...269.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 151.0...154.0  
1000 s: (148.0...157.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : CUM 8,3 D 2  
 Edition : 20.05.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 436 103  
 Injection pump  
 Pump designation : PES6MW100/120RS1143  
 EP type number : 0 413 406 137  
 Governor  
 Governor design. : RQV350...1100MW82  
 Governer no. : 0 420 083 130  
 Customer-spec. information  
 Customer : CUMMINS/US  
 Engine : 6 CTA-830  
 1st version kW : 186.0  
 Rated speed : 2200

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 017  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0.6  
 Test lines : 1 680 750 008  
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15  
 : (3.00...3.20)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

### BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 15.0...15.2  
 100 s: (14.8...15.4)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 7.2...7.3  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.4...2.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

### (B) Setting of injection pump with governor

#### GUIDE SLEEVE TRAVEL

1st speed rpm : 1240  
 travel mm : 8.80...9.20  
 2nd speed rpm : 1140  
 travel mm : 7.80...8.00  
 3rd speed rpm : 700  
 travel mm : 3.80...4.40  
 4th speed rpm : 350  
 travel mm : 1.20...1.60

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 900  
 Del.quantity : 150.0...152.0  
 1000 : (148.0...154.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

### RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 11.70  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1330  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.2

Testing:

Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 7.20...7.30

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 700  
Rack travel in m: 13.40...13.50  
3rd speed rpm : 900  
Rack travel in m: 12.90...13.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.90...10.10

Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 520  
Rack travel in m: 12.20...12.50  
3rd pressure hPa : 900  
Rack travel in m: 13.60...13.70

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 159.0...161.0  
1000 s: (157.0...163.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 88.0...90.0  
1000 s: (86.0...92.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (202.0...228.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.20...7.30  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (14.0...22.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark/lock = 8.0°  
angular displacement of the cam after  
start of delivery of cylinder 1.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 A 14  
 Edition : 19.05.88  
 Replaces : 25.08.87  
 Test oil : ISO-4113

Combination no. : 0 403 444 110

Injection pump  
 Pump designation : PES4MW100/720RS1127  
 EP type number : 0 413 404 103  
 Governor  
 Governor design. : PQV300...1300MW48-1  
 Governer no. : 0 420 083 084

## Customer-spec. information

Customer : DB

Engine : OM 364 A

1st version kW : 85.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
               : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 80.0...82.0

1000 : (78.0...84.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 10.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.10  
3rd speed rpm : 585  
Rack travel in m: 12.10...12.30  
4th speed rpm : 1000  
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 76.0...78.0  
1000 s: (74.0...80.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 585  
Del.quantity cm<sup>3</sup>/ : 71.5...74.5  
1000 s: (69.0...77.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...7.90  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 A 19  
 Edition : 13.06.88  
 Replaces : 25.08.87  
 Test oil : ISO-4113

Combination no. : 0 403 444 112

Injection pump  
 Pump designation : PES4MW100/720RS1127  
 EP type number : 0 413 404 103  
 Governor  
 Governor design. : RQV300...1300MW48-2  
 Governer no. : 0 420 083 110

## Customer-spec. information

Customer : DB

Engine : OM 364 A

1st version kW : 85.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
               : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/

100 s: (7.8...8.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del.quantity cm<sup>3</sup>/

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 80.0...82.0

1000 : (78.0...84.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 10.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.10  
3rd speed rpm : 585  
Rack travel in m: 12.10...12.30  
4th speed rpm : 1000  
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 76.0...78.0  
1000 s: (74.0...80.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 585  
Del.quantity cm<sup>3</sup>/ : 71.5...74.5  
1000 s: (69.0...77.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...7.90  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 A 25  
 Edition : 08.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 444 115

Injection pump  
 Pump designation : PES4MW100/720RS1127  
 EP type number : 0 413 404 103  
 Governor  
 Governor design. : RQV300...1200MW48-6  
 Governer no. : 0 420 083 157

Customer-spec. information  
 Customer : DB

Engine : OM364A

1st version kW : 77.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.2...8.4

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1325

travel mm : 9.40...9.80

2nd speed rpm : 1250

travel mm : 8.60...8.80

3rd speed rpm : 550

travel mm : 3.00...3.60

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm³ : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 10.00  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.3

Testing:

Speed rpm : 100  
Minimum rack trave: 9.70  
Speed rpm : 300  
Rack travel in mm : 8.20...8.40

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 600  
Rack travel in m: 12.00...12.20  
3rd speed rpm : 800  
Rack travel in m: 11.60...11.80  
4th speed rpm : 900  
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 65.0...68.0  
1000 s: (62.5...70.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 70.0...73.0  
1000 s: (67.5...75.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.20...8.40  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 6.0 G  
 Edition : 15.08.89  
 Replaces : 12.85  
 Test oil : ISO-4113

Combination no. : 0 403 446 104

Injection pump  
 Pump designation : PES6MW100/320RS1004  
 EP type number : 0 413 406 003  
 Governor  
 Governor design. : RQV300...1400MW6R  
 Governer no. : 0 420 083 002

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD60B

1st version kW : 132.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 670

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 10.00

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1550...1580

4th rack travel in: 1700

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.00...21.00

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 420...480

LOW IDLE  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 9.5...13.5  
1000 s: (7.0...16.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Aneroid/Altitude  
Compensator Test

Remarks:

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 210  
Rack travel mm : 9.70...9.80

Measurement  
Speed 1/min : 500  
  
1st pressure hPa : 670  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : -  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 270  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 670  
Speed rpm : 1400  
Del.quantity cm<sup>3</sup>/ : 86.5...90.5  
1000 s: (84.5...92.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 48.0...50.0  
1000 s: (46.0...52.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
  
full load rack tr: 10.00  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 6,0 N  
 Edition : 15.08.89  
 Replaces : 12.85  
 Test oil : ISO-4113

Combination no. : 0 403 446 110

Injection pump  
 Pump designation : PES6MW100/320RS1004  
 EP type number : 0 413 406 005  
 Governor  
 Governor design. : RQV300...1400MW22  
 Governer no. : 0 420 083 019

Customer-spec. information  
 Customer : VOLVO

Engine : TD60B

1st version kW : 132.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 500

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 10.00

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1565...1595

4th rack travel in: 1700

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 7...15  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.9

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 320...460

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 190  
Rack travel mm : 9.90...10.00

Measurement  
Speed 1/min : 500  
  
1st pressure hPa : 500  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : -  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 255  
Rack travel in m: 10.30...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm3/ : 72.0...74.0  
1000 s: (70.0...76.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
  
full load rack tr: 10.00  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...150.0  
1000 s: (117.0...153.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 9.5...13.5  
1000 s: (7.0...16.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 A 12  
 Edition : 19.05.88  
 Replaces : 20.08.87  
 Test oil : ISO-4113

Combination no. : 0 403 446 124

Injection pump  
 Pump designation : PES6MW100/720RS1101  
 EP type number : 0 413 406 102  
 Governor  
 Governor design. : RQV300...1300MW34  
 Governer no. : 0 420 083 032

## Customer-spec. information

Customer : DB

Engine : OM362LA

1st version kW : 141.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.1

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1475

travel mm : 8.60...9.00

2nd speed rpm : 1340

travel mm : 7.50...7.70

3rd speed rpm : 500

travel mm : 2.60...3.20

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version	Spread            cm <sup>3</sup> : 5.00
Control lever	1000 s: (7.0)
position degrees: 57...65	Aneroid pressure h: -
Testing:	Speed            rpm : 500
1st rack travel in: 10.90	Del.quantity cm <sup>3</sup> / : 50.0...52.0
Speed            rpm : 1340...1350	1000 s: (48.0...54.0)
2nd rack travel in: 4.00	RACK STOP ADJUSTMENT
Speed            rpm : 1460...1490	Speed            rpm : 100
4th rack travel in: 1600	BREAKAWAY
Speed            rpm : 0.10...1.00	1st version
LOW IDLE 1	1mm rack travel less than
Control lever	full load rack tr: 10.90
position degrees: 17...25	Speed            rpm : 1340...1350
Setting point w/out bumper spring	STARTING FUEL DELIVERY
Speed            rpm : 300	Speed            rpm : 100
Rack travel in mm : 6.0	Del.quantity cm <sup>3</sup> / : 78.0...88.0
Testing:	1000 s: (75.0...91.0)
Speed            rpm : 100	LOW IDLE
Minimum rack trave: 7.60	Speed            rpm : 300
Speed            rpm : 300	Rack travel in mm : 6.00...6.10
Rack travel in mm : 6.00...6.10	Del.quantity cm <sup>3</sup> / : 9.0...13.0
Rack travel in mm : 2.00	1000 s: (7.0...15.0)
Speed            rpm : 460...520	Spread            cm <sup>3</sup> : 3.50
Aneroid/Altitude Compensator Test	1000 s: (5.50)
1st version	Remarks:
Setting	:
Speed            rpm : 500	
Pressure        hPa : -	
Rack travel mm : 10.20...10.30	
Measurement	
Speed            1/min : 500	
1st pressure hPa : 100	
Rack travel in m: 10.60...10.70	
2nd pressure hPa : 125	
Rack travel in m: 11.10...11.30	
3rd pressure hPa : 700	
Rack travel in m: 11.90...12.00	
START CUT-OUT	
Speed            1/min : 230 (250)	
FUEL DELIVERY CHARACTERISTICS	
1st version	
Aneroid pressure h: 700	
Speed            rpm : 800	
Del.quantity cm <sup>3</sup> / : 87.5...90.5	
1000 s: (85.0...93.0)	

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 A 11  
 Edition : 13.06.88  
 Replaces : 20.08.87  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 134  
 Injection pump  
 Pump designation : PES6MW100/720RS1101  
 EP type number : 0 413 406 102  
 Governor  
 Governor design. : RQV300...1300MW44  
 Governer no. : 0 420 083 053  
 Customer-spec. information  
 Customer : DB  
 Engine : OM362LA  
 1st version kW : 141.0  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 30...32  
 Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.1

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

**GUIDE SLEEVE POSITION**

## Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

## 1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 60...68

Testing:

1st rack travel in: 10.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1435...1465  
4th rack travel in: 1600  
Speed rpm : 0.10...1.00

LOW IDLE 1

Control lever  
position degrees: 7...15  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack trave: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.10  
Rack travel in mm : 2.00  
Speed rpm : 520...580

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.00...10.10

Measurement

Speed 1/min : 500

1st pressure hPa : 100  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 125  
Rack travel in m: 10.90...11.10  
3rd pressure hPa : 700  
Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm3/ : 87.5...90.5  
1000 s: (85.0...93.0)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 47.5...49.5  
1000 s: (45.5...51.5)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.10  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 8,7 0  
 Edition : 13.06.88  
 Replaces : 20.08.87  
 Test oil : ISO-4113

Combination no. : 0 403 446 143

Injection pump  
 Pump designation : PES6MW100/720RS1101  
 EP type number : 0 413 406 102  
 Governor  
 Governor design. : RQV300...1300MW44-1  
 Governer no. : 0 420 083 064

Customer-spec. information  
 Customer : DB

Engine : OM362LA

1st version kW : 141.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.1

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1435...1465  
4th rack travel in: 1600  
Speed rpm : 0.10...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.10  
Rack travel in mm : 2.00  
Speed rpm : 520...580

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500  
1st pressure hPa : 100  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 125  
Rack travel in m: 11.10...11.30  
3rd pressure hPa : 700  
Rack travel in m: 11.90...12.00

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm3/ : 87.5...90.5  
1000 s: (85.0...93.0)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 50.0...52.0  
1000 s: (48.0...54.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 100

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.10  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Set intermediate-speed stop (ZDA) to  
contact at 1300 1/min, then turn back  
1/2 turn.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 11  
 Edition : 24.06.88  
 Replaces : 11.85  
 Test oil : ISO-4113

Combination no. : 0 403 446 145

Injection pump  
 Pump designation : PES6MN100/720RS1114  
 EP type number : 0 413 406 111  
 Governor  
 Governor design. : RQV300...1300MW48  
 Governer no. : 0 420 083 066

## Customer-spec. information

Customer : DB

Engine : OM366A

1st version kW : 125.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 10.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1520  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

Testing:

Speed rpm : 100  
Minimum rack trave: 9.40  
Speed rpm : 300  
Rack travel in mm : 7.80...7.90  
Rack travel in mm : 2.00  
Speed rpm : 500...560

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 700  
Rack travel in m: 12.10...12.20  
3rd speed rpm : 720  
Rack travel in m: 12.10...12.20  
4th speed rpm : 800  
Rack travel in m: 11.80...12.00  
5th speed rpm : 900  
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700  
Del.quantity cm3/ : 74.5...77.5  
1000 s: (72.0...80.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

H03

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...7.90  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 4  
 Edition : 13.06.88  
 Replaces : 11.85  
 Test oil : ISO-4113

Combination no. : 0 403 446 147

Injection pump  
 Pump designation : PES6MW100/720RS1115  
 EP type number : 0 413 406 110  
 Governor  
 Governor design. : RQV300...1300MW50  
 Governer no. : 0 420 083 071

Customer-spec. information  
 Customer : DB

Engine : OM366LA

1st version kW : 148.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.7

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version	Spread            cm <sup>3</sup> : 5.00
Control lever	1000 s: (7.0)
position degrees: 50...58	Aneroid pressure h: -
Testing:	Speed            rpm : 500
1st rack travel in: 10.90	Del.quantity cm <sup>3</sup> / : 53.0...55.0
Speed            rpm : 1340...1350	1000 s: (51.0...57.0)
2nd rack travel in: 4.00	BREAKAWAY
Speed            rpm : 1435...1465	1st version
4th rack travel in: 1550	1mm rack travel less than
Speed            rpm : 0.00...1.00	full load rack tr: 10.90
LOW IDLE 1	Speed            rpm : 1340...1350
Control lever	Setting point w/out bumper spring
position degrees: 16...24	Speed            rpm : 300
Setting point w/out bumper spring	Rack travel in mm : 5.6
Speed            rpm : 300	Rack travel in mm : 5.60...5.70
Rack travel in mm : 5.6	STARTING FUEL DELIVERY
Testing:	Speed            rpm : 100
Speed            rpm : 100	Del.quantity cm <sup>3</sup> / : 83.0...93.0
Minimum rack trave: 7.20	1000 s: (80.0...96.0)
Speed            rpm : 300	LOW IDLE
Rack travel in mm : 5.60...5.70	Speed            rpm : 300
CONSTANT REGULATION	Rack travel in mm : 5.60...5.70
Speed            rpm : 370...550	Del.quantity cm <sup>3</sup> / : 9.0...13.0
Aneroid/Altitude	1000 s: (7.0...15.0)
Compensator Test	Spread            cm <sup>3</sup> : 3.50
1st version	1000 s: (5.50)
Setting	Remarks:
Speed            rpm : 500	:
Pressure        hPa : 180	
Rack travel mm : 10.80...10.90	
Measurement	
Speed            1/min : 500	
1st pressure hPa : 700	
Rack travel in m: 11.90...12.00	
2nd pressure hPa : -	
Rack travel in m: 10.10...10.20	
3rd pressure hPa : 210	
Rack travel in m: 11.40...11.70	
START CUT-OUT	
Speed            1/min : 220 (250)	
FUEL DELIVERY CHARACTERISTICS	
1st version	
Aneroid pressure h: 700	
Speed            rpm : 600	
Del.quantity cm <sup>3</sup> / : 82.0...85.0	
1000 s: (79.5...87.5)	

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 3  
 Edition : 16.06.88  
 Replaces : 12.09.86  
 Test oil : ISO-4113

Combination no. : 0 403 446 155

Injection pump  
 Pump designation : PES6MW100/720RS1115  
 EP type number : 0 413 406 110  
 Governor  
 Governor design. : RQV300...1300MW62  
 Governer no. : 0 420 083 085

## Customer-spec. information

Customer : DB

Engine : OM366LA

1st version kW : 148.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/

100 s: (9.5...10.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.7

Del.quantity cm<sup>3</sup>/

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 10.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1435...1465  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack trave: 7.20  
Speed rpm : 300  
Rack travel in mm : 5.60...5.70

CONSTANT REGULATION

Speed rpm : 370...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 180  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 210  
Rack travel in m: 11.60...11.90

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 82.5...85.5  
1000 s: (80.0...88.0)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 57.0...59.0  
1000 s: (55.0...61.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 83.0...93.0  
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.60...5.70  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Set intermediate-speed stop (ZDA) to contact at 1300 1/min, then turn back 1/2 turn.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 47

Edition : 13.06.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 446 156

## Injection pump

Pump designation : PES6MW100/720RS1120

EP type number : 0 413 406 112

## Governor

Governor design. : RQV300...1300MW59

Governor no. : 0 420 083 077

## Customer-spec. information

Customer : DB

Engine : OM366LA

1st version kW : 141.7

Rated speed : 2600

## TEST BENCH REQUIREMENTS

## Test oil

inlet temp. °C : 38...42

## Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.1

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version	Spread            cm <sup>3</sup> : 5.00
Control lever	1000 s: (7.0)
position degrees: 48...56	Aneroid pressure h: -
Testing:	Speed            rpm : 500
1st rack travel in: 11.10	Del.quantity cm <sup>3</sup> / : 47.0...49.0
Speed            rpm : 1340...1350	1000 s: (45.0...51.0)
2nd rack travel in: 4.00	
Speed            rpm : 1440...1470	
4th rack travel in: 1530	BREAKAWAY
Speed            rpm : 0.00...1.00	
LOW IDLE 1	1st version
Control lever	1mm rack travel less than
position degrees: 16...24	full load rack tr: 11.10
Setting point w/out bumper spring	Speed            rpm : 1340...1350
Speed            rpm : 300	STARTING FUEL DELIVERY
Rack travel in mm : 6.0	
Testing:	Speed            rpm : 100
Speed            rpm : 100	Del.quantity cm <sup>3</sup> / : 83.0...93.0
Minimum rack trave: 8.00	1000 s: (80.0...96.0)
Speed            rpm : 300	LOW IDLE
Rack travel in mm : 6.00...6.10	Speed            rpm : 300
CONSTANT REGULATION	Rack travel in mm : 6.00...6.10
Speed            rpm : 320...550	Del.quantity cm <sup>3</sup> / : 9.0...13.0
Aneroid/Altitude	1000 s: (7.0...15.0)
Compensator Test	Spread            cm <sup>3</sup> : 3.50
	1000 s: (5.50)
1st version	Remarks:
Setting	:
Speed            rpm : 500	
Pressure        hPa : 260	
Rack travel    mm : 11.00...11.10	
Measurement	
Speed            1/min : 500	
1st pressure hPa : 700	
Rack travel in m: 12.00...12.10	
2nd pressure hPa : -	
Rack travel in m: 10.80...10.90	
3rd pressure hPa : 310	
Rack travel in m: 11.70...12.00	
START CUT-OUT	
Speed            1/min : 230 (250)	
FUEL DELIVERY CHARACTERISTICS	
1st version	
Aneroid pressure h: 700	
Speed            rpm : 750	
Del.quantity cm <sup>3</sup> / : 75.5...78.5	
1000 s: (73.0...81.0)	

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 14  
 Edition : 30.05.88  
 Replaces : 12.09.86  
 Test oil : ISO-4113

Combination no. : 0 403 446 169

Injection pump  
 Pump designation : PES6MW100/720RS1131  
 EP type number : 0 413 406 123  
 Governor  
 Governor design. : RQV300...1300MW68  
 Governer no. : 0 420 083 101

## Customer-spec. information

Customer : DB

Engine : OM 366 LA

1st version kW : 150.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/

100 s: (9.5...10.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.0

Del.quantity cm<sup>3</sup>/

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 8.40...8.602nd speed rpm : 1450  
 travel mm : 9.30...9.703rd speed rpm : 600  
 travel mm : 3.90...4.504th speed rpm : 300  
 travel mm : 0.80...1.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version Control lever position degrees: 50...58	Spread cm <sup>3</sup> : 5.00 1000 s: (7.0)
Testing: 1st rack travel in: 10.90 Speed rpm : 1340...1350	Aneroid pressure h: -
2nd rack travel in: 4.00 Speed rpm : 1440...1470	Speed rpm : 500
4th rack travel in: 1550 Speed rpm : 0.00...1.00	Del.quantity cm <sup>3</sup> / : 52.0...54.0 1000 s: (50.0...56.0)
BREAKAWAY	
LOW IDLE 1 Control lever position degrees: 11...19	1st version 1mm rack travel less than
Setting point w/out bumper spring Speed rpm : 300	full load rack tr: 10.90 Speed rpm : 1340...1350
Rack travel in mm : 5.9	STARTING FUEL DELIVERY
Testing: Speed rpm : 100 Minimum rack trave: 7.60	Speed rpm : 100 Del.quantity cm <sup>3</sup> / : 83.0...93.0 1000 s: (80.0...96.0)
Speed rpm : 300 Rack travel in mm : 5.90...6.00	LOW IDLE
CONSTANT REGULATION Speed rpm : 350...550	Speed rpm : 300 Rack travel in mm : 5.90...6.00 Del.quantity cm <sup>3</sup> / : 9.0...13.0 1000 s: (7.0...15.0)
Aneroid/Altitude Compensator Test	Spread cm <sup>3</sup> : 3.50 1000 s: (5.50)
1st version Setting Speed rpm : 500 Pressure hPa : 170 Rack travel mm : 10.40...10.50	Remarks: :
Measurement Speed 1/min : 500	
1st pressure hPa : 700 Rack travel in m: 11.90...12.00	
2nd pressure hPa : - Rack travel in m: 10.10...10.20	
3rd pressure hPa : 225 Rack travel in m: 11.50...11.80	
START CUT-OUT	
Speed 1/min : 220 (250)	
FUEL DELIVERY CHARACTERISTICS	
1st version Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm <sup>3</sup> / : 83.0...86.0 1000 s: (80.5...88.5)	

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 25  
 Edition : 30.05.88  
 Replaces : 13.05.87  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 170  
 Injection pump  
 Pump designation : PES6MW100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1300MW69  
 Governer no. : 0 420 083 102

## Customer-spec. information

Customer : DB

Engine : OM366A

1st version kW : 125.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/

100 s: (7.5...8.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del.quantity cm<sup>3</sup>/

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1340  
travel mm : 8.40...8.60

2nd speed rpm : 1450  
travel mm : 8.70...9.10

3rd speed rpm : 600  
travel mm : 3.90...4.50

4th speed rpm : 300  
travel mm : 0.80...1.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300  
Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 10.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

Testing:

Speed rpm : 100  
Minimum rack travel: 10.20  
Speed rpm : 300  
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.00  
3rd speed rpm : 700  
Rack travel in m: 12.00...12.20  
4th speed rpm : 1100  
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 70.5...73.5  
1000 s: (68.0...76.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...7.90  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 N 7  
 Edition : 08.06.88  
 Replaces : 09.03.87  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 186  
 Injection pump  
 Pump designation : PES6MW100/720RS1133  
 EP type number : 0 413 406 126  
 Governor  
 Governor design. : RQV325...1325MW79  
 Governer no. : 0 420 083 123  
 Customer-spec. information  
 Customer : KHD  
 Engine : BF 6L 913  
 1st version kW : 124.0  
 Rated speed : 2650

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 30...32  
 Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1325

Rack travel in mm : 10.50...10.60

Del.quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.8...6.9

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1375

travel mm : 8.70...8.90

2nd speed rpm : 1430

travel mm : 9.50...9.90

3rd speed rpm : 325

travel mm : 1.50...1.90

4th speed rpm : 600

travel mm : 2.70...3.30

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1325

Aneroid pressure h: 900

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version	Spread	cm <sup>3</sup>	: 3.50
Control lever		1000 s:	(7.0)
position degrees: 50...58	Aneroid pressure h:	-	
Testing:	Speed	rpm	: 500
1st rack travel in: 9.50	Del.quantity cm <sup>3</sup> /	: 57.0...59.0	
Speed rpm : 1370...1380	1000 s:	(55.0...61.0)	
2nd rack travel in: 4.00	RACK STOP ADJUSTMENT		
Speed rpm : 1445...1475	Speed	rpm	: 100
4th rack travel in: 1550	BREAKAWAY		
Speed rpm : 0.10...1.00	1st version		
LOW IDLE 1	1mm rack travel less than		
Control lever	full load rack tr: 9.50		
position degrees: 17...25	Speed rpm : 1370...1380		
Setting point w/out bumper spring	STARTING FUEL DELIVERY		
Speed rpm : 325	Speed rpm : 100		
Rack travel in mm : 6.8	Del.quantity cm <sup>3</sup> /	: 120.0...130.0	
Testing:	1000 s:	(117.0...133.0)	
Speed rpm : 100	LOW IDLE		
Minimum rack trave: 8.60	Speed rpm : 325		
Speed rpm : 325	Rack travel in mm : 6.80...6.90		
Rack travel in mm : 6.80...6.90	Del.quantity cm <sup>3</sup> /	: 11.0...15.0	
CONSTANT REGULATION	1000 s: (9.0...17.0)		
Speed rpm : 350...650	Spread cm <sup>3</sup>	: 3.50	
Aneroid/Altitude Compensator Test	1000 s: (5.00)		
1st version	Remarks:	:	
Setting			
Speed rpm : 500			
Pressure hPa : 450			
Rack travel mm : 10.20...10.00			
Measurement			
Speed 1/min : 500			
1st pressure hPa : -			
Rack travel in m: 8.90...10.00			
2nd pressure hPa : 450			
Rack travel in m: 10.20...10.00			
3rd pressure hPa : 900			
Rack travel in m: 10.50...10.60			
START CUT-OUT			
Speed 1/min : 245 (255)			
FUEL DELIVERY CHARACTERISTICS			
1st version			
Aneroid pressure h: 900			
Speed rpm : 850			
Del.quantity cm <sup>3</sup> /	: 93.0...97.0		
1000 s: (91.0...99.0)			

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 28  
 Edition : 01.07.88  
 Replaces : 19.02.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 188

Injection pump  
 Pump designation : PES6MW100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1300MW48-4  
 Governer no. : 0 420 083 126

Customer-spec. information  
 Customer : DB

Engine : OM366A

1st version kW : 100.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
                : (3.65...3.85)  
 Rack travel in mm : 19.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.10...10.20

Del.quantity cm<sup>3</sup>/ : 6.4...6.6

100 s: (6.2...6.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.3...7.4

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 8.50...8.70

2nd speed rpm : 1450

travel mm : 9.30...9.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 64.0...66.0

1000 : (62.0...68.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 9.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1415...1445  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3

Testing:

Speed rpm : 100  
Minimum rack trave: 9.30  
Speed rpm : 300  
Rack travel in mm : 7.30...7.40

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 750  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 600  
Rack travel in m: 11.10...11.20  
4th speed rpm : 900  
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 61.5...64.5  
1000 s: (59.0...67.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 9.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.30...7.40  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 S  
 Edition : 15.08.89  
 Replaces : 09.12.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 193

Injection pump  
 Pump designation : PES6MW100/320RS1159  
 EP type number : 0 413 406 146  
 Governor  
 Governor design. : RQV350...1300MW72-3  
 Governer no. : 0 420 083 142

## Customer-spec. information

Customer : NAVISTAR

Engine : DT-466

1st version kW : 136.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.40...10.50

Del.quantity cm<sup>3</sup>/ 100 s: 8.8...9.0

100 s: (8.6...9.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.4...6.5  
 Del.quantity cm<sup>3</sup>/ 100 s: 1.6...2.0  
 100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed	rpm	: 1250
	travel mm	: 7.80...8.00
2nd speed	rpm	: 1340
	travel mm	: 8.80...9.20
3rd speed	rpm	: 500
	travel mm	: 2.60...3.20
4th speed	rpm	: 350
	travel mm	: 1.30...1.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version		
Speed	rpm	: 900
Del.quantity		: 88.0...90.0
	1000	: (86.0...92.0)
Spread	cm <sup>3</sup>	: 3.50
	1000	: (6.00)

## RATED SPEED

1st version		
Control lever		
position	degrees:	46...51

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1370...1390  
2nd rack travel in: 4.00  
Speed rpm : 1475...1485  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.50

CONSTANT REGULATION  
Speed rpm : 370...500

#### START CUT-OUT

Speed 1/min : 180 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 91.5...95.5  
1000 s: (89.5...97.5)  
Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.40  
Speed rpm : 1370...1390

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.50

Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R21  
 Edition : 15.08.89  
 Replaces : 09.12.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 195

Injection pump  
 Pump designation : PES6MW100/320RS1112  
 EP type number : 0 413 406 108  
 Governor  
 Governor design. : RQV350...1200MW46-13  
 Governor no. : 0 420 083 144

## Customer-spec. information

Customer : NAVISTAR

Engine : DTA-466

1st version KW : 180.0

Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/

100 s: (11.7...12.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.4

Del.quantity cm<sup>3</sup>/

100 s: (1.6...2.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 800

Aneroid pressure h: 800

Del.quantity : 119.5...121.5

1000 : (117.5...123.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 43...48

### Testing:

1st rack travel in: 11.40  
Speed rpm : 1265...1285  
2nd rack travel in: 4.00  
Speed rpm : 1395...1405  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

### Testing:

Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.40

### CONSTANT REGULATION

Speed rpm : 360...450

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 190  
Rack travel mm : 11.20...11.30

### Measurement

Speed 1/min : 500

### 1st pressure hPa :

-  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 360  
Rack travel in m: 11.90...12.20  
3rd pressure hPa : 800  
Rack travel in m: 12.40...12.50

### START CUT-OUT

Speed 1/min : 180 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm3/ : 122.0...126.0  
1000 s: (120.0...128.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 86.5...88.5  
1000 s: (84.5...90.5)

### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1265...1285

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.40  
Del.quantity cm3/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

### Remarks:

:  
Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R23  
 Edition : 15.08.89  
 Replaces : 09.12.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 196

Injection pump  
 Pump designation : PES6MW100/320RS1112  
 EP type number : 0 413 406 108  
 Governor  
 Governor design. : RQV350...1200MW46-14  
 Governer no. : 0 420 083 145

## Customer-spec. information

Customer : NAVISTAR

Engine : DTA-466

1st version kW : 169.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.3

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 800

Aneroid pressure h: 800

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 44...49

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1250...1270  
2nd rack travel in: 4.00  
Speed rpm : 1390...1400  
4th rack travel in: 1460  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.2

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.30

CONSTANT REGULATION  
Speed rpm : 360...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 180  
Rack travel mm : 11.00...11.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 270  
Rack travel in m: 11.30...11.60  
3rd pressure hPa : 800  
Rack travel in m: 11.70...11.80

START CUT-OUT

Speed 1/min : 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm3/ : 111.0...115.0  
1000 s: (109.0...117.0)  
Spread cm3 : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 86.5...88.5  
1000 s: (84.5...90.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1250...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.20...6.30  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R24  
 Edition : 15.08.89  
 Replaces : 09.12.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 197

Injection pump  
 Pump designation : PES6MW100/320RS1112  
 EP type number : 0 413 406 108  
 Governor  
 Governor design. : RQV350...1200MW46-15  
 Governer no. : 0 420 083 146

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 158.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 9.7...9.9  
 100 s: (9.5...10.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.3...6.4  
 Del.quantity cm<sup>3</sup>/ : 1.9...2.3  
 100 s: (1.6...2.5)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed	rpm	: 1350
	travel mm	: 8.30...8.50
2nd speed	rpm	: 1460
	travel mm	: 9.10...9.50
3rd speed	rpm	: 550
	travel mm	: 3.10...3.70
4th speed	rpm	: 350
	travel mm	: 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 800  
 Aneroid pressure h: 800  
 Del.quantity : 97.5...99.5  
 1000 : (95.5...101.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 43...48

Testing:

1st rack travel in: 9.90  
Speed rpm : 1270...1290  
2nd rack travel in: 4.00  
Speed rpm : 1380...1390  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.40

CONSTANT REGULATION

Speed rpm : 360...450

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 280  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : 800  
Rack travel in m: 10.90...11.00

START CUT-OUT

Speed 1/min : 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm3/ : 99.5...103.5  
1000 s: (97.5...105.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 86.5...88.5  
1000 s: (84.5...90.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.40  
Del.quantity cm3/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 T  
 Edition : 15.08.89  
 Replaces : 28.04.89  
 Test oil : ISO-4113

Combination no. : 0 403 446 198

Injection pump  
 Pump designation : PES6MW100/320RS1160  
 EP type number : 0 413 406 147  
 Governor  
 Governor design. : RQV350...1200MW46-16  
 Governor no. : 0 420 083 147

## Customer-spec. information

Customer : NAVISTAR

Engine : DTA-466

1st version kW : 176.4

Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 12.5...12.7  
 100 s: (12.3...12.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.5...6.6  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 8.30...8.50  
 2nd speed rpm : 1460  
 travel mm : 9.10...9.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 800  
 Aneroid pressure h: 800  
 Del.quantity : 125.0...127.0  
 1000 : (123.0...129.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 44...49

Testing:

1st rack travel in: 11.80  
Speed rpm : 1260...1280  
2nd rack travel in: 4.00  
Speed rpm : 1385...1395  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5

Testing:

Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.50...6.60

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 800  
Pressure hPa : 180  
Rack travel mm : 10.40...10.50

Measurement

Speed 1/min : 800

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 480  
Rack travel in m: 11.90...12.20  
3rd pressure hPa : 800  
Rack travel in m: 12.80...12.90

START CUT-OUT

Speed 1/min : 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 1200  
Del.quantity cm3/ : 127.0...131.0  
1000 s: (125.0...133.0)  
Spread cm3 : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 800  
Del.quantity cm3/ : 82.0...84.0  
1000 s: (80.0...86.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1260...1280

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.50...6.60  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 R  
 Edition : 13.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 446 202

Injection pump  
 Pump designation : PES6MW100/320RS1167  
 EP type number : 0 413 406 151  
 Governor  
 Governor design. : RQV275...1250MW25-7  
 Governer no. : 0 420 180 381

Customer-spec. information  
Customer : RVI

Engine : MIDR 06 02 12L

1st version kW : 122.0

Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Del.quantity cm3/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 2.3...2.7

100 s: (2.0...2.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.20...8.40

2nd speed rpm : 1450

travel mm : 8.90...9.30

3rd speed rpm : 275

travel mm : 1.00...1.40

4th speed rpm : 900

travel mm : 5.40...6.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del.quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

## 1st version

Control lever  
position degrees: 8...16

Testing:

1st rack travel in: 11.60  
Speed rpm : 1320...1330  
2nd rack travel in: 4.0  
Speed rpm : 1485...1515  
4th rack travel in: 1650  
Speed rpm : 1.00...0.00

LOW IDLE 1

Control lever  
position degrees: 60...68  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 7.0  
Speed rpm : 275  
Rack travel in mm : 7.10...6.90  
Speed rpm : 200  
Maximum rack trave: 7.40

CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 160  
Rack travel mm : 10.80...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 1000  
Rack travel in m: 12.50...12.60  
2nd pressure hPa : -  
Rack travel in m: 10.20...10.10  
3rd pressure hPa : 320  
Rack travel in m: 12.20...11.90

START CUT-OUT

Speed 1/min : 190 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 101.0...105.0  
1000 s: (99.0...107.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 52.0...54.0  
1000 s: (50.0...56.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 7.10...6.90  
Del.quantity cm<sup>3</sup>/ : 23.0...27.0  
1000 s: (20.5...29.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 40

Edition : 01.07.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 446 207

## Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RQ300/1300MW96

Governor no. : 0 420 082 032

## Customer-spec. information

Customer : DB

Engine : OM366A

1st version kW : 125.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

## Test oil

inlet temp. °C : 38...42

## Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 7.9...8.1

100 s: (7.7...8.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...7.6

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1425

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 7.80...8.00

3rd speed rpm : 525

travel mm : 4.90...5.50

4th speed rpm : 300

travel mm : 2.10...2.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1200

Rack travel in mm : 12.70...14.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 79.0...81.0

1000 : (77.0...83.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 34...42

Setting point:  
Speed rpm : 1200  
Rack travel in mm : 13.5

Testing:  
1st rack travel in: 10.20  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.40...7.60

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 900  
Rack travel in m: 11.90...12.10  
3rd speed rpm : 600  
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 180 (200)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 77.0...80.0  
1000 s: (74.5...82.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 70.0...73.0  
1000 s: (67.5...75.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1340...1350  
STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 80.0...90.0  
1000 s: (77.0...93.0)

LOW IDLE  
Speed rpm : 300  
Rack travel in mm : 7.40...7.60  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S  
 Edition : 15.08.89  
 Replaces : 13.06.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 208

Injection pump  
 Pump designation : PES6MW100/320RS1171  
 EP type number : 0 413 406 156  
 Governor  
 Governor design. : RQV300...1400MW97  
 Governer no. : 0 420 083 158

Customer-spec. information  
 Customer : RVI

Engine : MIDS060212C

1st version kW : 97.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.70...6.90

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1570

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 500

travel mm : 3.00...3.40

4th speed rpm : 300

travel mm : 1.10...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.00  
Speed rpm : 1460...1470  
2nd rack travel in: 4.00  
Speed rpm : 1565...1595  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.8

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.70...6.90

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 66.5...69.5  
1000 s: (64.0...72.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1460...1470

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.40  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 T  
 Edition : 15.08.89  
 Replaces : 07.10.88  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 211  
 Injection pump  
 Pump designation : PES6MW100/320RS1176  
 EP type number : 0 413 406 158  
 Governor  
 Governor design. : RQV275...1250MW80  
 Governer no. : 0 420 083 128  
 Customer-spec. information  
 Customer : RVI  
 Engine : MIDR 060226H  
 1st version kW : 143.0  
 Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 033  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 008  
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
               : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1250

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 6.40...6.60

Del.quantity cm<sup>3</sup>/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1450

travel mm : 8.90...9.30

2nd speed rpm : 1325

travel mm : 8.00...8.20

3rd speed rpm : 500

travel mm : 3.00...3.60

4th speed rpm : 275

travel mm : 1.00...1.40

**GUIDE SLEEVE POSITION**

## Control-lever position

Degree: -1

Speed rpm : 1320

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

## 1st version

Speed rpm : 1250

Aneroid pressure h: 750

Del.quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 49...57

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 51.0...53.0  
1000 s: (49.0...55.0)

#### Testing:

1st rack travel in: 10.40  
Speed rpm : 1330...1350  
2nd rack travel in: 4.00  
Speed rpm : 1440...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1330...1350

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 6.5

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 88.0...102.0  
1000 s: (85.0...105.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 20.0...24.0  
1000 s: (17.5...26.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Set start-of-delivery sensor at pre-stroke to 3.50...3.60 mm for cylinder 1.

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 750  
Rack travel mm : 11.40...11.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 150  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 300  
Rack travel in m: 10.90...11.20

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 750  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 94.5...97.5  
1000 s: (92.0...100.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R22  
 Edition : 15.08.89  
 Replaces : 09.12.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 213

**Injection pump**  
 Pump designation : PES6MW100/320RS1112  
 EP type number : 0 413 406 108  
**Governor**  
 Governor design. : RQV350...1300MW72-4  
 Governer no. : 0 420 083 170

## Customer-spec. information

Customer : NAVISTAR

Engine : DT-466

1st version kW : 154.5  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values   

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.50...10.60

Del.quantity cm<sup>3</sup>/ 100 s: (9.7...10.3)

Spread cm<sup>3</sup> : 0.3  
                  100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.5...5.6  
 Del.quantity cm<sup>3</sup>/ 100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3  
                  100 s: (0.5)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed	rpm	: 1460
	travel mm	: 9.10...9.50
2nd speed	rpm	: 1350
	travel mm	: 8.30...8.50
3rd speed	rpm	: 550
	travel mm	: 3.10...3.70
4th speed	rpm	: 350
	travel mm	: 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 800  
 Del.quantity 1000 : 99.0...101.0  
                  1000 : (97.0...103.0)  
 Spread cm<sup>3</sup> : 3.50  
                  1000 : (6.00)

## RATED SPEED

1st version  
 Control lever position degrees: 43...51

Testing:  
1st rack travel in: 9.50  
Speed rpm : 1365...1385  
2nd rack travel in: 4.00  
Speed rpm : 1470...1480  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.50...5.60

CONSTANT REGULATION  
Speed rpm : 390...480

START CUT-OUT

Speed 1/min : 180 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 101.0...105.0  
1000 s: (99.0...107.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 1365...1385

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.50...5.60  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 T 2  
 Edition : 15.08.89  
 Replaces : 09.12.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 214

Injection pump  
 Pump designation : PES6MW100/320RS1160  
 EP type number : 0 413 406 147  
 Governor  
 Governor design. : RQV350...1300MW46-18  
 Governer no. : 0 420 083 171

## Customer-spec. information

Customer : NAVISTAR

Engine : DTA-466

1st version kW : 156.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 9.10...9.50

2nd speed rpm : 1350

travel mm : 8.30...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 350

Aneroid pressure h: 80

Del.quantity : 119.0...112.0

1000 : 108.0...114.0

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 42...50

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.0...76.0  
1000 s: (72.0...78.0)

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1355...1375  
2nd rack travel in: 4.00  
Speed rpm : 1475...1485  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### BREAKAWAY

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.4

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1355...1375

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.50

STARTING FUEL DELIVERY  
Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

CONSTANT REGULATION  
Speed rpm : 300...450

LOW IDLE  
Speed rpm : 350  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Aneroid/Altitude  
Compensator Test

Remarks:  
Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 800  
Rack travel mm : 11.90...12.00

Before checking sleeve position,  
first adjust latching.

Measurement  
Speed 1/min : 500

In unlatched condition, do not  
operate greater than n = 500 1/min

1st pressure hPa : -  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 165  
Rack travel in m: 10.70...10.80  
3rd pressure hPa : 360  
Rack travel in m: 11.30...11.60

Set low idle at stop screw.

#### START CUT-OUT

Speed 1/min : 180 (240)

Set shutoff stop 1.5...2.0 mm before  
shutoff.

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 113.0...117.0  
1000 s: (111.0...119.0)

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6.0 D 55  
 Edition : 15.08.89  
 Replaces : 07.02.89  
 Test oil : ISO-4113

Combination no. : 0 403 446 231

Injection pump  
 Pump designation : PES6MW100/720RS1144-  
 1  
 EP type number : 0 413 406 159  
 Governor  
 Governor design. : RQV300...1400MW48-8  
 Governer no. : 0 420 083 175

Customer-spec. information  
 Customer : DB-NKW

Engine : OM 366 A

1st version kW : 125.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.10...9.50

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 500

travel mm : 2.50...3.10

4th speed rpm : 300

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:

1st rack travel in: 9.70  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.6

Testing:

Speed rpm : 100  
Minimum rack trave: 10.00  
Speed rpm : 300  
Rack travel in mm : 8.50...8.70

TORQUE CONTROL

Dimension a mm : 1.50  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 950  
Rack travel in m: 11.70...11.90  
4th speed rpm : 1200  
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 74.5...77.5  
1000 s: (72.0...80.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.70  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.50...8.70  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6.0 D 69  
 Edition : 15.08.89  
 Replaces : 21.04.89  
 Test oil : ISO-4113  
  
 Combination no. : 0 403 446 232  
  
 Injection pump  
 Pump designation : PES6MW100/720RS1144-  
 EP type number : 0 413 406 159  
 Governor  
 Governor design. : RQV300...1400MW48-11  
 Governer no. : 0 420 083 190  
  
 Customer-spec. information  
 Customer : DB-NKW  
  
 Engine : OM366A  
  
 1st version kW : 125.0  
 Rated speed : 2800

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
  
 Overflow valve : 1 417 413 047  
  
 Inlet press., bar : 1.50  
  
 Test nozzle holder assembly : 0 681 343 009  
  
 Opening pressure, bar : 172...175  
  
 Test lines : 1 680 750 015  
  
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1550

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 550

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.00...1.40

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

### 1st version

Control lever  
position degrees: 48...56

### Testing:

1st rack travel in: 9.90  
Speed rpm : 1440...1450

2nd rack travel in: 4.00  
Speed rpm : 1530...1560

4th rack travel in: 1650  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.9

### Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.00

### TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 800  
Rack travel in m: 11.50...11.60  
3rd speed rpm : 1000  
Rack travel in m: 11.10...11.30

### START CUT-OUT

Speed 1/min : 230 (250)

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 67.5...70.5  
1000 s: (65.0...73.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1440...1450

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 80.0...90.0  
1000 s: (77.0...93.0)

### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.00  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

### Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 4  
 Edition : 18.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 446 233

Injection pump  
 Pump designation : PES6MW100/320RS1171  
 EP type number : 0 413 406 156  
 Governor  
 Governor design. : RQV300...1400MW97-1  
 Governer no. : 0 420 083 195

## Customer-spec. information

Customer : RVI

Engine : MIDS060212C

1st version kW : 97.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.70...6.90

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1570

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.00  
Speed rpm : 1460...1470  
2nd rack travel in: 4.00  
Speed rpm : 1565...1595  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

Remarks:  
Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.8

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.70...6.90

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 66.5...69.5  
1000 s: (64.0...72.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1460...1470

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.70...6.90  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 T 1

Edition : 18.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 446 234

Injection pump

Pump designation : PES6MW100/320RS1176

EP type number : 0 413 406 158

Governor

Governor design. : RQV275...1250MW80-4

Governor no. : 0 420 083 196

Customer-spec. information

Customer : RVI

Engine : MIDR 060226H

1st version kW : 143.0

Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

## (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 6.40...6.60

Del. quantity cm<sup>3</sup>/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 8.90...9.30

2nd speed rpm : 1325

travel mm : 8.00...8.20

3rd speed rpm : 500

travel mm : 3.00...3.60

4th speed rpm : 275

travel mm : 1.00...1.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1320

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 750

Del. quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ 1000 s: 51.0...53.0  
1000 s: (49.0...55.0)

Testing:

1st rack travel in: 10.40  
Speed rpm : 1330...1350  
2nd rack travel in: 4.00  
Speed rpm : 1440...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 4.9

Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 275  
Rack travel in mm : 6.40...6.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 750  
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 150  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 300  
Rack travel in m: 10.90...11.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 750  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ 1000 s: 94.5...97.5  
1000 s: (92.0...100.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1330...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ 1000 s: 88.0...102.0  
1000 s: (85.0...105.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ 1000 s: 20.0...24.0  
1000 s: (17.5...26.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Set start-of-delivery sensor at pre-stroke to 3.50...3.60 mm for cylinder 1.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 S 3

Edition : 18.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 446 235

## Injection pump

Pump designation : PES6MW100/320RS1171

EP type number : 0 413 406 156

## Governor

Governor design. : RQV300...1300MW80-5

Governor no. : 0 420 083 197

## Customer-spec. information

Customer : RVI

Engine : MIDS 060212B

1st version kW : 113.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

## Test oil

inlet temp. °C : 38...42

## Overflow valve

: 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 008

## Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

## (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.60...6.80

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.70...9.10

2nd speed rpm : 1350

travel mm : 7.60...7.80

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

## 1st version

Control lever

position degrees: 60...68

## Testing:

1st rack travel in: 11.40

Speed rpm : 1370...1380  
2nd rack travel in: 4.00  
Speed rpm : 1520...1550  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.50...10.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : 100  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 200  
Rack travel in m: 11.80...12.10  
3rd pressure hPa : 700  
Rack travel in m: 12.40...12.50

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm3/ : 81.0...84.0  
1000 s: (78.5...86.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 43.0...45.0  
1000 s: (41.0...47.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1370...1380

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (87.0...113.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Set start-of-delivery sensor at pre-stroke to 3.50...3.60 mm for cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 E  
 Edition : 28.11.88  
 Replaces : 26.06.87  
 Test oil : ISO-4113

Combination no. : 0 403 466 107

Injection pump  
 Pump designation : PES6MN100/120RS1148  
 EP type number : 0 413 406 143  
 Governor  
 Governor design. : RSV400...900MW7A319-  
                   5  
 Governer no. : 0 420 085 082

Customer-spec. information  
 Customer : CUMMINS/US

Engine : 6 CTA-8.3 L

1st version kW : 196.9  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
                : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 18.3...18.5

100 s: (18.1...18.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 183.0...185.0

1000 : (181.5...187.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:  
1st rack travel in: 12.00  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 965...990  
4th rack travel in: 1000  
Speed rpm : 0.30...1.70

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.90...6.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 179.0...183.0  
1000 s: (177.0...185.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.90...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 N  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 466 121

Injection pump  
 Pump designation : PES6MW100/120RS1184  
 EP type number : 0 413 406 171  
 Governor  
 Governor design. : RSV400...1300MW2A334  
 Governer no. : 0 420 085 122

Cust. part no. : 3280646

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 BTAA 5.9

1st version kW : 157.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017Opening  
 pressure, bar : 207...210Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.8...7.0

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 800

Del.quantity : 125.0...127.0

1000 : (123.0...129.0)

Spread cm³ : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.90  
Speed rpm : 1295...1305  
2nd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.9

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 590...650

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.90...10.00

Measurement

Speed 1/min : 500

1st pressure hPa : 490  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 550  
Rack travel in m: 10.40...10.70  
3rd pressure hPa : 800  
Rack travel in m: 10.90...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 80.0...82.0  
1000 s: (78.0...84.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...145.0  
1000 s: (132.0...148.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.80...7.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. #3280646

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 A 23

Edition : 01.07.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 474 003

Injection pump

Pump designation : PES4MN100/720RS1127

EP type number : 0 413 404 103

Governor

Governor design. : RSV350...1300MWOA318  
-3

Governer no. : 0 420 085 087

Customer-spec. information

Customer : DB

Engine : OM364A

1st version kW : 85.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.2

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 53...61

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.40

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1390...1420

4th rack travel in: 1480  
Speed rpm : 0.30...1.70  
  
LOW IDLE 1  
Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.1

Speed rpm : 350  
Rack travel in mm : 7.10...7.20  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 7.10...7.20  
Rack travel in mm : 2.00  
Speed rpm : 470...530

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.40...12.60  
2nd speed rpm : 750  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 950  
Rack travel in m: 12.70...12.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 79.0...81.0  
1000 s: (77.0...83.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 83.0...86.0  
1000 s: (80.5...88.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1320...1330

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 83.0...93.0  
1000 s: (80.0...96.0)

#### LOW IDLE

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 5,6 B  
 Edition : 14.07.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 474 008

Injection pump  
 Pump designation : PES4MW100/720RS1181  
 EP type number : 0 413 404 107  
 Governor  
 Governor design. : RSV400...1000MW1A333  
 Governer no. : 0 420 085 118

Customer-spec. information  
 Customer : LIEBHERR

Engine : 914

1st version kW : 120.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 740 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/

100 s: (14.4...15.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 146.0...148.0

1000 : (144.0...150.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 46...54

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.70  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1275  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 480...540

### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 145.5...148.5  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (7.0)

### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1040...1050

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

#### Remarks:

:

K01

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 50  
 Edition : 24.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 476 027

Injection pump  
 Pump designation : PES6MW100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RSV350...1300MW1A316  
 -6  
 Governer no. : 0 420 085 098

Customer-spec. information  
 Customer : DB

Engine : OM366A

1st version kW : 125.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 7.2...7.4

100 s: (7.0...7.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.6

Del.quantity cm<sup>3</sup>/ : 0.9...1.1

100 s: (0.7...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 72.0...74.0

1000 : (70.0...76.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 54...62

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.70

Speed rpm : 1340...1345  
2nd rack travel in: 4.00  
Speed rpm : 1380...1393  
3rd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70

Del.quantity cm<sup>3</sup>/ : 9.0...11.0  
1000 s: (7.0...13.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Speed rpm : 350  
Rack travel in mm : 7.00...7.60  
Rack travel in mm : 2.00  
Speed rpm : 445...505

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 700  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 825  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 69.0...71.0  
1000 s: (67.0...73.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 825  
Del.quantity cm<sup>3</sup>/ : 73.0...75.0  
1000 s: (71.0...77.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.70  
Speed rpm : 1340...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.00...7.60

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 A 17  
 Edition : 20.05.88  
 Replaces : 12.85  
 Test oil : ISO-4113

Combination no. : 0 403 476 028

Injection pump  
 Pump designation : PES6MW100/720RS1125  
 EP type number : 0 413 406 119  
 Governor  
 Governor design. : RSV300...1300MW0A317  
 Governer no. : 0 420 085 045

Customer-spec. information  
 Customer : DB

Engine : OM 362 LA

1st version kW : 141.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.0

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 900

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.80

Speed rpm : 1330...1340

2nd rack travel in: 4.00

Speed rpm : 1400...1430

4th rack travel in: 1560  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.90...6.00

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 350  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 450  
Rack travel in m: 11.40...11.60  
3rd pressure hPa : -  
Rack travel in m: 9.70...9.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 800  
Del.quantity cm3/ : 97.0...99.0  
1000 s: (95.0...101.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 46.0...48.0  
1000 s: (44.0...50.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1330...1340

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 88.0...98.0  
1000 s: (85.0...101.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.90...6.00  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 45

Edition : 20.05.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 476 029

Injection pump

Pump designation : PES6MN100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RSV350...1200MW1A316  
-1

Governor no. : 0 420 085 048

Customer-spec. information

Customer : DB

Engine : OM366A

1st version kW : 110.0

Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.80...9.90

Del.quantity cm<sup>3</sup>/ : 6.9...7.1

100 s: (6.7...7.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...7.0

Del.quantity cm<sup>3</sup>/ : 0.9...1.1

100 s: (0.7...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 69.0...71.0

1000 : (67.0...73.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 52...60

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.80

Speed rpm : 1240...1245  
2nd rack travel in: 4.00  
Speed rpm : 1280...1293  
3rd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1360  
Speed rpm : 0.30...1.70

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Rack travel in mm : 2.00  
Speed rpm : 465...525

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.90...10.10  
2nd speed rpm : 750  
Rack travel in m: 10.60...10.70  
3rd speed rpm : 950  
Rack travel in m: 10.30...10.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 56.0...58.0  
1000 s: (54.0...60.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 71.0...73.0  
1000 s: (69.0...75.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.80  
Speed rpm : 1240...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...7.00  
Del.quantity cm<sup>3</sup>/ : 9.0...11.0  
1000 s: (7.0...13.0)

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 44

Edition : 20.05.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 476 036

Injection pump

Pump designation : PES6MW100/720RS1129

EP type number : 0 413 406 121

Governor

Governor design. : RSV350...1300MWOA317  
-1

Governor no. : 0 420 085 051

Customer-spec. information

Customer : DB

Engine : OM 366 LA

1st version kW : 150.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.50...11.60

Del.quantity cm<sup>3</sup>/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 900

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.50

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1385...1415  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.60  
Speed rpm : 350  
Rack travel in mm : 5.50...5.70

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.50...9.60

##### Measurement

Speed 1/min : 500  
  
1st pressure hPa : 175  
Rack travel in m: 10.00...10.20  
2nd pressure hPa : 300  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : 900  
Rack travel in m: 11.50...11.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm3/ : 85.0...89.0  
1000 s: (83.0...89.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 48.0...50.0  
1000 s: (46.0...52.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 10.50  
Speed rpm : 1320...1330  
  
STARTING FUEL DELIVERY  
  
Speed rpm : 100  
Del.quantity cm3/ : 88.0...98.0  
1000 s: (85.0...101.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 8.0...12.0  
1000 s: (6.0...14.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 41  
 Edition : 19.05.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 476 037

Injection pump  
 Pump designation : PES6MW100/720RS1130  
 EP type number : 0 413 406 122  
 Governor  
 Governor design. : RSV350...1300MW0A318  
 Governer no. : 0 420 085 052

## Customer-spec. information

Customer : DB

Engine : OM 366 A

1st version kW : 125.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.00...11.20

Del.quantity cm³/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 750.0

Rack travel in mm : 11.7...11.8

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm³ : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.00

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1380...1410

4th rack travel in: 1560

Speed rpm : 0.30...1.70	Spread cm <sup>3</sup> : 3.50 1000 s: (5.50)
LOW IDLE 1 Control lever position degrees: 25...33 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 8.0	Remarks: :
Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 8.00...8.10	
SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00	
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1280 Rack travel in m: 11.00...11.20 2nd speed rpm : 750 Rack travel in m: 11.70...11.80 3rd speed rpm : 825 Rack travel in m: 11.40...11.60	
FUEL DELIVERY CHARACTERISTICS	
1st version Speed rpm : 750 Del.quantity cm <sup>3</sup> / : 72.0...74.0 1000 s: (70.0...76.0) Spread cm <sup>3</sup> : 5.00 1000 s: (7.0)	
BREAKAWAY	
1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 1320...1330	
STARTING FUEL DELIVERY	
Speed rpm : 100 Del.quantity cm <sup>3</sup> / : 78.0...88.0 1000 s: (75.0...91.0)	
LOW IDLE	
Speed rpm : 350 Rack travel in mm : 8.00...8.10 Del.quantity cm <sup>3</sup> / : 9.0...13.0 1000 s: (7.0...15.0)	

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 46

Edition : 08.06.88

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 476 055

## Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

## Governor

Governor design. : RSV350...1200MW1A316  
-8

Governor no. : 0 420 085 097

## Customer-spec. information

Customer : DB

Engine : OM366A

1st version kW : 92.0

Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.60...9.70

Del.quantity cm<sup>3</sup>/ : 6.0...6.2

100 s: (5.8...6.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.9

Del.quantity cm<sup>3</sup>/ : 0.9...1.1

100 s: (0.6...1.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 15.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 60.0...62.0

1000 : (58.0...64.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 58...66

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.60

Speed rpm : 1240...1245  
2nd rack travel in: 4.00  
Speed rpm : 1263...1276  
3rd rack travel in: 4.00  
Speed rpm : 1290...1320  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1240...1255  
Speed rpm : 8.60

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.90  
Rack travel in mm : 2.00  
Speed rpm : 415...475

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.60...9.70  
2nd speed rpm : 800  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 950  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 59.0...61.0  
1000 s: (57.0...63.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.60  
Speed rpm : 1240...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.90  
Del.quantity cm<sup>3</sup>/ : 9.0...11.0  
1000 s: (6.0...14.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6.0 D 18  
 Edition : 20.05.88  
 Replaces : 14.11.86  
 Test oil : ISO-4113

Combination no. : 0 403 476 057

Injection pump  
 Pump designation : PES6MW100/720RS1129-  
 EP type number : 0 413 406 140  
 Governor  
 Governor design. : RSV300...1300MWOA324  
 Governer no. : 0 420 085 079

Customer-spec. information  
 Customer : DB

Engine : OM 366 LA

1st version kW : 150.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 900

Del.quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm³ : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.90

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1385...1415  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.90...10.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : 175  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 300  
Rack travel in m: 11.20...11.40  
3rd pressure hPa : 900  
Rack travel in m: 11.90...12.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm3/ : 83.0...87.0  
1000 s: (81.0...89.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 46.0...48.0  
1000 s: (44.0...50.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1320...1330

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 88.0...98.0  
1000 s: (85.0...101.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6.0 D 38  
 Edition : 30.05.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 476 059

Injection pump  
 Pump designation : PES6MW100/720RS1130  
 EP type number : 0 413 406 122  
 Governor  
 Governor design. : RSV575...1250MW0A325  
 Governer no. : 0 420 085 083

## Customer-spec. information

Customer : DB

Engine : OM 366 A

1st version kW : 125.0

Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 7.8...8.0

100 s: (7.6...8.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 575.0

Rack travel in mm : 5.6...5.7

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del.quantity : 78.0...80.0

1000 : (76.0...82.0)

Spread cm³ : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 46...54

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

## Testing:

1st rack travel in: 9.90

Speed rpm : 1270...1280

2nd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1350

Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 575

Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 575

Rack travel in mm : 5.60...5.70

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 55.0...59.0

1000 s: (53.0...61.0)

Spread cm<sup>3</sup> : 5.00

1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1270...1280

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 78.0...88.0

1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 575

Rack travel in mm : 5.60...5.70

Del.quantity cm<sup>3</sup>/ : 9.0...13.0

1000 s: (7.0...15.0)

Spread cm<sup>3</sup> : 3.50

1000 s: (5.00)

#### Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,2 N  
 Edition : 18.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 068  
 Injection pump  
 Pump designation : PES6MW100/320RS1153-  
 1  
 EP type number : 0 413 406 162  
 Governor  
 Governor design. : RSV300...750MW1A802  
 Governer no. : 0 420 085 113  
 Customer-spec. information  
 Customer : MAN  
 Engine : D0826LE20  
 1st version kW : 116.0  
 Rated speed : 1500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 008  
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32  
 Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 700  
 Rack travel in mm : 12.30...12.40  
 Del.quantity cm<sup>3</sup>/ : 14.3...14.5  
 100 s: (14.1...14.7)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 6.9...7.1  
 Del.quantity cm<sup>3</sup>/ : 3.3...3.7  
 100 s: (3.0...3.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 700  
 Del.quantity : 143.0...145.0  
 1000 : (141.0...147.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 30...38

Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 0.6

Testing:  
 1st rack travel in: 11.30  
 Speed rpm : 750...755  
 2nd rack travel in: 4.00  
 Speed rpm : 777...790

4th rack travel in: 950  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.0  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 750...755

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.90...7.10  
Del.quantity cm<sup>3</sup>/ : 33.0...37.0  
1000 s: (30.5...39.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 68

Edition : 14.07.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 476 071

## Injection pump

Pump designation : PES6MW100/720RS1130-  
2

EP type number : 0 413 406 164

Governor

Governor design. : RSV350...1300MWOA318  
-6

Governor no. : 0 420 085 117

## Customer-spec. information

Customer : DB-NKW

Engine : OM 366 A

1st version kW : 125.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm³ : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 46...54

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

### Testing:

1st rack travel in: 10.00  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1380...1410  
4th rack travel in: 1560  
Speed rpm : 0.30...1.70

### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.5

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 7.40...7.60  
Rack travel in mm : 2.00  
Speed rpm : 400...460

### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1280  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 750  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 825  
Rack travel in m: 11.40...11.60

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 71.5...74.5  
1000 s: (69.0...77.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1320...1330

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.40...7.60  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

### Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 75

Edition : 15.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 476 075

Injection pump

Pump designation : PES6MW100/720RS1130

EP type number : 0 413 406 122

Governor

Governor design. : RSV350...750MWOA336-  
1

Governor no. : 0 420 085 124

Customer-spec. information

Customer : DB-NKW

Engine : OM366A

1st version kW : 84.0

Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values ----

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 80.0...82.0

1000 : (78.0...84.0)

Spread cm³ : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 24...32

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 775...788

4th rack travel in: 800  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 7.40...7.60

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 88.0...98.0  
1000 s: (85.0...101.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.40...7.60  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:

When setting the governor, the  
throttle screw of damper 1 must be  
open 1 turn.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6.0 F  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 076  
 Injection pump  
 Pump designation : PES6MW100/720RS1120-1  
 EP type number : 0 413 406 172  
 Governor  
 Governor design. : RSV350...1300MWOA2-1  
 Governer no. : 0 420 085 125  
 Customer-spec. information  
 Customer : DB-NKW  
 Engine : OM 366 LA  
 1st version kW : 142.0  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
               : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1300  
 Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 9.4...9.6  
 100 s: (9.2...9.8)

Spread cm³ : 0.3  
 100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.2...6.9  
 Del.quantity cm³/ : 1.0...1.2  
 100 s: (0.6...1.5)

Spread cm³ : 0.3  
 100 s: (0.5)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1300  
 Aneroid pressure h: 700  
 Del.quantity : 94.0...96.0  
 1000 : (92.0...98.0)

Spread cm³ : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version  
 Control lever position degrees: 56...64

Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 0.6

Testing:  
 1st rack travel in: 12.00  
 Speed rpm : 1340...1345  
 2nd rack travel in: 4.00

Speed rpm : 1427...1440  
3rd rack travel in: 4.00  
Speed rpm : 1460...1490  
4th rack travel in: 1600  
Speed rpm : 0.30...1.70  
5th rack travel in: 1335...1350  
Speed rpm : 12.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.60...11.70

Measurement  
Speed 1/min : 500  
  
1st pressure hPa : 300  
Rack travel in m: 12.10...12.20  
2nd pressure hPa : 360  
Rack travel in m: 12.60...12.90  
3rd pressure hPa : 700  
Rack travel in m: 13.00...13.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 49.0...51.0  
1000 s: (47.0...53.0)

#### BREAKAWAY

1st version

K25

1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1340...1345  
STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...95.0  
1000 s: (92.0...98.0)

LOW IDLE  
Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Del.quantity cm<sup>3</sup>/ : 10.0...12.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:  
:  
Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 76  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 476 077

Injection pump  
 Pump designation : PES6MN100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RSV350...1300MWOA3  
 Governer no. : 0 420 085 126

## Customer-spec. information

Customer : DB-NKW

Engine : OM 366 LA

1st version kW : 127.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.65...3.75  
 : (3.60...3.80)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.9

Del.quantity cm³/ : 1.0...1.2

100 s: (0.6...1.5)

Spread cm³ : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm³ : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.00

Speed rpm : 1340...1345

2nd rack travel in: 4.00

Speed rpm : 1397...1410

3rd rack travel in: 4.00

Speed rpm : 1430...1460  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70  
5th rack travel in: 1335...1350  
Speed rpm : 10.80

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

:

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Rack travel in mm : 2.00  
Speed rpm : 440...500

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 800  
Rack travel in m: 12.10...12.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 75.0...78.0  
1000 s: (72.5...80.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1340...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 80.0...90.0  
1000 s: (77.0...93.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Del.quantity cm<sup>3</sup>/ : 10.0...12.0  
1000 s: (6.5...15.5)

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 74

Edition : 15.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 0 403 476 078

## Injection pump

Pump designation : PES6MW100/720RS1129

EP type number : 0 413 406 121

## Governor

Governor design. : RSV350...750MWOA336

Governor no. : 0 420 085 127

## Customer-spec. information

Customer : DB-NKW

Engine : OM 366 LA

1st version kW : 94.0

Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 24...32

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.50

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 775...788

4th rack travel in: 820

Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever

position degrees: 10...18

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 6.00...6.20

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 750...755

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 88.0...98.0

1000 s: (85.0...101.0)

#### LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.00...6.20

Del.quantity cm<sup>3</sup>/ : 9.0...13.0

1000 s: (7.0...15.0)

Spread cm<sup>3</sup> : 3.50

1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 8,7 p 2  
 Edition : 20.6.88  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 403 564 008

Injection pump  
 Pump designation : PE6MW100/720RS1126  
 EP type number : 0 413 506 101  
 Governor  
 Governor design. : RQ300...1250MW12-2  
 Governer no. : 0 420 082 020

## Customer-spec. information

Customer : DAIMLER BENZ

Engine : OM360A

1st version kW : 147.00

Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32  
 Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 9.70...9.90

100 s: (9.50...10.10)

Spread cm<sup>3</sup> : 0.35

100 s: (0.60)

2nd speed rpm : 300

Rack travel in mm : 8.60...8.70

Del.quantity cm<sup>3</sup>/ : 1.00...1.40

100 s: (0.70...1.60)

Spread cm<sup>3</sup> : 0.35

100 s: (0.50)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 13.10...13.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 97.00...99.00

1000 : (95.0...101.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.90

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1415...1445

3rd rack travel in: 0.10...1.00

Speed rpm : 1550

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.60...8.70

Testing:

Speed rpm : 220

Minimum rack trave: 10.40

Speed rpm : 300

Rack travel in mm : 8.60...8.70

Rack travel in mm : 2.00

Speed rpm : 430...470

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MTU 47.6 c  
 Edition : 31.8.89  
 Replaces : 23.3.87  
 Test oil : ISO-4113

Combination no. : 0 406 030 999

Injection pump  
 Pump designation : PEV12ZWM160/120RS  
 1030/11  
 EP type number : 0 416 060 999  
 Governor  
 Governor design. : RQU425...600/1300ZWA  
 62-1  
 Governer no. : 0 422 405 016

Customer-spec. information  
 Customer : MTU

Engine : MB 873

## TEST BENCH REQUIREMENTS

Test oil  
 Outlet temp., °C : 42...45

Overflow valve  
 : -

Inlet press., bar : 3.0

Overflow  
 quantity min. 1/h: 600...720

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 069

Outside diameter  
 x Wall thickness  
 x Length mm : 8,00x2,00x1500

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 12.00  
 Firing order : 12-9-3-6-8-11-1-4-10  
 -7-5-2

Phasing : 0-15-60-75-120-135-  
 180-195-240-255-300-  
 315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 9.00

Del.quantity cm³/ : 24.5...26.3 \*

100 s: (24.2...26.6)

Spread cm³ : 1.8

100 s: (2.7)

2nd speed rpm : 425

Rack travel in mm : 6.80

Del.quantity cm³/ : 7.9...8.7

100 s: (-)

Spread cm³ : 1.6

100 s: (-)

1st speed rpm : 1300

Rack travel in mm : 9.00

Del.quantity cm³/ : 22.2..24.0\*\*

100 s: (21.9..24.3)

Spread cm³ : 1.8

100 s: (2.7)

2nd speed rpm : 425

Rack travel in mm : 6.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 45...55

Speed rpm : 800

Rack travel in mm : 12.00...12.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity cm³/ : 375.0...379.0 \*

1000 : (372.0...382.0)

Spread cm³ : 8.0

1000 : (12.0)

2nd version

Speed rpm : 1300

Del.quantity cm³/ : 357.0...361.0\*\*

1000 s: (354.0...361.0)

Spread      cm<sup>3</sup> : 8.0  
              1000 s: (12.0)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...54

Setting point:  
Speed      rpm : 1300  
Rack travel in mm : 13.8

Testing:  
1st rack travel in: 12.80  
  Speed      rpm : 1325...1340  
2nd rack travel in: 4.00  
  Speed      rpm : 1420...1460  
4th rack travel in: 1470...1550  
  Speed      rpm : <0.01

#### SET IDLE CONTROL LEVER POSITION

Speed      rpm : 425  
Rack travel in mm : 6.80  
Control lever  
position degrees: 15...21

LOW IDLE 1  
Speed      rpm : 425  
Rack travel in mm : 6.70...6..90

#### BREAKAWAY

1st version  
1mm rack travel less than:  
  full load rack tr: 12.80  
Speed      rpm : 1325...1340

#### INTERMEDIATE RATED SPEED

Control lever  
position degrees: 28...34  
Rack travel in mm : 6.50  
Speed      rpm : 600

Remarks:  
\* = Bank A = cyl. 1-3-5-8-10-12.

\*\* = Bank B = cyl. 2-4-6-7-9-11.

Note mounting and test instructions  
KH/VSK 40 JP 1.

Set with adjusting gauge KDEP 1533.

Inlet pressure 3 bar with overflow quantity 10...12 l/min (measured at return).

Instead of overflow valve, connect a hand valve of minimum nominal size 1/2" into the return.  
Overflow quantity as well as inlet pressure must be observed precisely.  
Note further that the calibrating oil temperature 42°...45° C must be measured at the return.

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MTU 37.4 C  
 Edition : 20.10.87  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 406 039 111

Injection pump  
 Pump designation : PE10ZWM160/120ZWA68R  
 EP type number : 0 416 069 001  
 Governor  
 Governor design. : RQU425/1200ZWA68R  
 Governer no. : 0 422 407 036

## Customer-spec. information

Customer : MTU

Engine : MB 838 KA

1st version kW : 100  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 016

Outside diameter  
 x Wall thickness  
 x Length mm : 8,00x2,00x1500

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60  
                : (2.45...2.65)  
 Rack travel in mm : 12.00  
 Firing order : 10-3-4-5-6-7-8-1-2-9

Phasing : 0-27-72-99-144-171-  
                216-243-288-315  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 15.00  
 Del.quantity cm³/ : 51.5...53.5  
                100 s: (51.0...54.0)

Spread cm³ : 1.5  
                100 s: (2.2)

2nd speed rpm : 1000  
 Rack travel in mm : 9.00  
 Del.quantity cm³/ : 26.5...28.5  
                100 s: (26.0...29.0)  
 Spread cm³ : 1.5  
                100 s: (2.2)  
 3rd speed rpm : 300  
 Rack travel in mm : 9.00  
 Del.quantity cm³/ : 15.0...18.0  
                100 s: (14.5...18.5)  
 Spread cm³ : 2.0  
                100 s: (3.0)

## GUIDE SLEEVE POSITION

Control-lever position  
                Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 18.00...18.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 505.0...515.0  
                1000 : (500.0...520.0)  
 Spread cm³ : 15.0  
                1000 : (22.0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 52...58

Testing:  
 1st rack travel in: 15.00  
                Speed rpm : 1200  
 2nd rack travel in: 14.00  
                Speed rpm : 1225...1240

3rd rack travel in: 4.00  
Speed rpm : 1312...1352  
4th rack travel in: 1339...1389  
Speed rpm : 0.01

Special-purpose vehicle

LOW IDLE 1  
Control lever  
position degrees: 20...26  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 6.80

Testing:  
Speed rpm : 200  
Minimum rack trave: 18.00  
Speed rpm : 300  
Rack travel in mm : 12.60...16.60  
Rack travel in mm : 6.80  
Speed rpm : 425  
Speed rpm : 1275  
Maximum rack trave: 0.01  
Rack travel in mm : 1.50  
Speed rpm : 600...1200

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.00  
Speed rpm : 1225...1240

#### HIGH IDLE

1st version  
Rack travel in mm : 4.00  
Spread cm<sup>3</sup> : 12.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 6.80  
Del.quantity cm<sup>3</sup>/ : 104.0...111.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 10.0  
1000 s: (-)

#### Remarks:

:

Set idle stop at 425 min <sup>-1</sup> to a control-rod travel of 6.8 mm.

Limit shutoff stop screw to 1.0 mm.

#### APPLICATION

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : YDA 7,3 b  
 Edition : 09.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 258

Injection pump  
 Pump designation : PES6A80C410/3LS2400Z  
 Governor  
 Governor design. : RSV200...900A1B682L

Customer-spec. information  
 Customer : RUSTON & HORNSBY

Engine : 6 YDA MK II

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)

Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm<sup>3</sup>/ : 5,7...6,2

100 s: (-)

Spread cm<sup>3</sup> : 0,3

100 s: (-)

2nd speed rpm : 200

Rack travel in mm : 6,00

Del.quantity cm<sup>3</sup>/ : 1,4...2,3

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 36,5...37,5 \*

1000 : (36,0...38,0)

2nd version

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 37,5...38,5 \*\*

1000 s: (37,0...39,0)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9,30

Speed rpm : 930...940

2nd rack travel in: 5,50

Speed rpm : 960...990

4th rack travel in: 1100

Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 6,00

Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 300  
Rack travel in mm : 6,40...6,60  
Rack travel in mm : 2,00  
Speed rpm : 425...475

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ 1000 s: 36.5...38.5 \*  
1000 s: (36.0...38.0)

2nd version

Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ 1000 s: 37.5...38.5 \*\*  
1000 s: (37.0...39.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 930...940

HIGH IDLE

1st version

Speed rpm : 975  
Rack travel in mm : 5,50

Remarks:

: \* = BX  
: \*\* = BY

APPLICATION

Navy

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : YDA 7,3 b 1  
 Edition : 09.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 258

Injection pump  
 Pump designation : PES6A80D410/3LS2400Z  
 Governor  
 Governor design. : RSV200...900A1B682L

Customer-spec. information  
 Customer : KIRLOSKAR

Engine : 6 YDA MK II

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
-----		
Rack travel in mm	:	9,00
-----		
Del.quantity cm3/	:	5,7...6,2
-----		
100 s:	(-)	
-----		
Spread	cm3	: 0,3
-----		
100 s:	(-)	
-----		
2nd speed	rpm	: 200
Rack travel in mm	:	6,00
Del.quantity cm3/	:	1,4...2,3
100 s:	(-)	

## GUIDE SLEEVE POSITION

Control-lever position	Degree:	-3
Speed	rpm	: 800
Rack travel in mm	:	0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version	Speed	rpm	: 750
	Del.quantity	:	36,5...37,5 *
	1000	:	(36,0...38,0)
2nd version	Speed	rpm	: 750
	Del.quantity cm3/	:	37,5...38,5 **
	1000 s:	:	(37,0...39,0)

## RATED SPEED

1st version	Control lever	position	degrees:	42...50
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Testing:  
 1st rack travel in: 9,30  
 Speed rpm : 930...940  
 2nd rack travel in: 5,50  
 Speed rpm : 960...990  
 4th rack travel in: 1100  
 Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever	position	degrees:	14...22
Setting point w/out bumper spring			
Speed	rpm	:	200
Rack travel in mm	:	6,00	

Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 300  
Rack travel in mm : 6,40...6,60  
Rack travel in mm : 2,00  
Speed rpm : 425...475

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 36,5...37,5 \*  
1000 s: (36,0...38,0)

2nd version

Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 37,5...38,5 \*\*  
1000 s: (37,0...39,0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 930...940

HIGH IDLE

1st version

Speed rpm : 975  
Rack travel in mm : 5,50

Remarks:

: \* = BX  
: \*\* = BY

APPLICATION

Navy

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 1,9 c  
 Edition : 28.07.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 296

Injection pump  
 Pump designation : PES2A80D320RS2490  
 Governor  
 Governor design. : RSV250...1100A4B784D  
 L

Customer-spec. information  
 Customer : KIRLOSKAR

Engine : RB 2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-2

Phasing : 0-90  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
 \_\_\_\_\_  
 Rack travel in mm : 9,00  
 \_\_\_\_\_  
 Del.quantity cm3/ : 4,15...4,55

100 s: (-)  
 \_\_\_\_\_  
 Spread cm3 : 0,3  
 \_\_\_\_\_  
 100 s: (-)  
 \_\_\_\_\_  
 2nd speed rpm : 200  
 Rack travel in mm : 9,00  
 Del.quantity cm3/ : 2,35...3,35  
 100 s: (-)

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1080  
 Del.quantity : 56,1...58,1  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 16,00  
 Speed rpm : 890...910  
 2nd rack travel in: 11,60  
 Speed rpm : 920...940  
 3rd rack travel in: 5,70...5,90  
 Speed rpm : 960  
 4th rack travel in: 1000  
 Speed rpm : 2,00...2,40  
 5th rack travel in: 1100  
 Speed rpm : 0,30...1,00

LOW IDLE 1  
 Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 250  
 Rack travel in mm : 6,00

Testing:  
 Speed rpm : 100  
 Minimum rack trave: 19,00  
 Speed rpm : 150  
 Rack travel in mm : 11,00...21,00  
 Rack travel in mm : 6,00  
 Speed rpm : 230...270

Speed rpm : 600  
Maximum rack trave: 1,00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080  
Rack travel in m: 9,00  
2nd speed rpm : 750  
Rack travel in m: 10,10...10,50  
3rd speed rpm : 500  
Rack travel in m: 11,00...11,40

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 14,00

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 1 a  
 Edition : 28.07.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 297

Injection pump  
 Pump designation : PES6A80D320RS2493  
 Governor  
 Governor design. : RSV250...1100A4B784D  
 L

Customer-spec. information  
 Customer : KIRLOSKAR (MICO)

Engine : RB 6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Inlet press., bar : 1.0

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values   

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
               : (2,10...2,30)  
Rack travel in mm : 9,00...12,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

L14

1st speed rpm : 1000  
 Rack travel in mm : 9,00  
 Del.quantity cm3/ : 4,15...4,55  
 Spread cm3 : 0,3  
 100 s: (-)

2nd speed rpm : 200  
 Rack travel in mm : 9,00  
 Del.quantity cm3/ : 2,35...3,35  
 100 s: (-)

**GUIDE SLEEVE POSITION**  
 Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**  
 1st version  
 Speed rpm : 1080  
 Del.quantity : 56,1...58,1  
 1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 46...54

**Testing:**  
 1st rack travel in: 8,00  
 Speed rpm : 1115...1125  
 2nd rack travel in: 2,20  
 Speed rpm : 985...1015  
 4th rack travel in: 1100  
 Speed rpm : 0,30...1,00

**LOW IDLE 1**  
 Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6,00

**Testing:**  
 Speed rpm : 100  
 Minimum rack trave: 19,00  
 Speed rpm : 250  
 Rack travel in mm : 5,80...6,20  
 Speed rpm : 600  
 Maximum rack trave: 1,00

## TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 9,00

2nd speed rpm : 750

Rack travel in m: 10,10...10,50

3rd speed rpm : 500

Rack travel in m: 11,00...11,40

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00

## STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 14,00

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 3,9 c  
 Edition : 31.07.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 299  
**Injection pump**  
 Pump designation : PES4A80D320RS2492  
 Governor  
 Governor design. : RSV250...1100A4B784D  
 L

## Customer-spec. information

Customer : KIRLOSKAR  
 Engine : RB 4

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 1.0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 9,00  
 Del.quantity cm<sup>3</sup>/ : 4,15...4,55  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0,3  
 100 s: (-)  
 2nd speed rpm : 200  
 Rack travel in mm : 9,00  
 Del.quantity cm<sup>3</sup>/ : 2,35...3,35  
 100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1080  
 Del.quantity : 56,1...58,1  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 16,00  
 Speed rpm : 890...910  
 2nd rack travel in: 11,60  
 Speed rpm : 920...940  
 3rd rack travel in: 5,80  
 Speed rpm : 950...970  
 4th rack travel in: 1000  
 Speed rpm : 2,00...2,40  
 5th rack travel in: 1100  
 Speed rpm : 0,30...1,00

## LOW IDLE 1

Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 250  
 Rack travel in mm : 6,00

Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 250  
Rack travel in mm : 5,80...6,20  
Speed rpm : 600  
Maximum rack trave: 1,00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 9,00  
2nd speed rpm : 750  
Rack travel in m: 10,10...10,50  
3rd speed rpm : 500  
Rack travel in m: 11,00...11,40

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: ?  
Speed rpm : 1115...1125

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 14,00

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : YDA 3,7 a  
 Edition : 09.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 314

Injection pump  
 Pump designation : PES3A80D410/3LS2428Z  
 Governor  
 Governor design. : RSV200...900A/B682L

Customer-spec. information  
 Customer : RUSTON & HORNSBY

Engine : 3 YDA MK 2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-2-3

Phasing : 0-120-240  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 9,00  
 Del.quantity cm<sup>3</sup>/ : 5,7...6,2  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0,3  
 100 s: (-)  
 2nd speed rpm : 200  
 Rack travel in mm : 6,00  
 Del.quantity cm<sup>3</sup>/ : 1,4...2,3  
 100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Del.quantity : 73,0...75,0  
 1000 : (72,0...76,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 42...50

Testing:  
 1st rack travel in: 9,30  
 Speed rpm : 930...940  
 2nd rack travel in: 5,50  
 Speed rpm : 965...995  
 4th rack travel in: 1100  
 Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever  
 position degrees: 16...24  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 19,00

Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,00  
Speed rpm : 425...475

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 930...940

#### HIGH IDLE

1st version  
Speed rpm : <960  
Rack travel in mm : 5,50

Remarks:

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : YDA 4,9 c  
 Edition : 09.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 315

Injection pump  
 Pump designation : PES4A80D410/3LS2404Z  
 Governor  
 Governor design. : RSV200...900A/B682L

Customer-spec. information  
 Customer : RUSTON & HORNSBY

Engine : 4 YDA MK 2

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm		: 9,00
Del.quantity cm <sup>3</sup> /		: 5,7...6,2
		100 s: (-)
Spread	cm <sup>3</sup>	: 0,3
		100 s: (-)
2nd speed	rpm	: 200
Rack travel in mm		: 6,00
Del.quantity cm <sup>3</sup> /		: 1,4...2,3
		100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Del.quantity : 73,0...75,0  
 1000 : (72,0...76,0)

## RATED SPEED

1st version  
 Control lever  
position degrees: 42...50

Testing:  
 1st rack travel in: 9,30  
 Speed rpm : 930...940  
 2nd rack travel in: 5,50  
 Speed rpm : 965...995  
 4th rack travel in: 1100  
 Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever  
position degrees: 16...24  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 19,00

Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,00  
Speed rpm : 425...475

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 930...940

#### HIGH IDLE

1st version  
Speed rpm : <960  
Rack travel in mm : 5,50

Remarks:

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 1 b  
 Edition : 01.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 318

Injection pump  
 Pump designation : PES4A65D320RS1323  
 Governor  
 Governor design. : RSV300...1750AOB2016  
 R

Customer-spec. information  
 Customer : KIRLOSKAR (MICO)

Engine : RE 4

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 1.0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 1,90...2,00  
 : (1,85...2,05)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12,00  
 Del.quantity cm<sup>3</sup>/ : 5,1...6,1  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0,3  
 100 s: (-)  
 2nd speed rpm : 200  
 Rack travel in mm : 6,00  
 Del.quantity cm<sup>3</sup>/ : 0,85...1,65  
 100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del.quantity : 32,0...34,0  
 1000 : (31,0...35,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 66...74

Testing:  
 1st rack travel in: 11,00  
 Speed rpm : 1780...1790  
 2nd rack travel in: 7,00  
 Speed rpm : 2085...2115  
 4th rack travel in: 2250  
 Speed rpm : 0,30...1,00

LOW IDLE 1  
 Control lever  
 position degrees: 13...21  
 Setting point w/out bumper spring  
 Speed rpm : 300  
 Rack travel in mm : 6,00

Testing:  
 Speed rpm : 120  
 Minimum rack travel: 19,00  
 Speed rpm : 300  
 Rack travel in mm : 5,80...6,20

Speed rpm : 650  
Maximum rack trave: 1,00

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1750  
Del.quantity cm<sup>3</sup>/ 1000 s: 31,4...41,4  
(36,0...42,0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11,00  
Speed rpm : 1780...1790

#### HIGH IDLE

1st version

Speed rpm : 1810  
Del.quantity cm<sup>3</sup>/ 1000 s: 4,5  
(-)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 1,9 b  
 Edition : 09.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 320  
 Injection pump  
 Pump designation : PES2A85D320RS2528  
 Governor  
 Governor design. : RSV250...900A1B2015R

Customer-spec. information  
 Customer : KIRLOSKAR

Engine : RDA 2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values   

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-2

Phasing : 0-90  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm		: 9,00
Del.quantity cm <sup>3</sup> /		: 4,0...4,6
100 s:		(-)
Spread	cm <sup>3</sup>	: 0,4
100 s:		(-)
2nd speed	rpm	: 200
Rack travel in mm		: 6,00
Del.quantity cm <sup>3</sup> /		: 1,2...2,2
100 s:		(-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Del.quantity : 57,4...58,4  
 1000 : (57,0...62,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 7,80  
 Speed rpm : 940...960  
 2nd rack travel in: 3,10  
 Speed rpm : 1005...1035  
 4th rack travel in: 1150  
 Speed rpm : 0,30...1,00

## LOW IDLE 1

Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 19,00

Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,10  
Speed rpm : 390...410  
Speed rpm : 550  
Maximum rack trave: 1,00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12,50...13,00

#### HIGH IDLE

1st version  
Speed rpm : 950  
Rack travel in mm : 4,00

Remarks:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 2,9 b  
 Edition : 09.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 321

Injection pump  
 Pump designation : PES3A85D320RS2529  
 Governor  
 Governor design. : RSV250...900A1B2015R

Customer-spec. information  
 Customer : KIRLOSKAR  
 Engine : RDA 3

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-2

Phasing : 0-120-240  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm		: 9,00
Del.quantity cm3/		: 4,0...4,6
	100 s:	(-)
Spread	cm3	: 0,4
	100 s:	(-)
2nd speed	rpm	: 200
Rack travel in mm		: 6,00
Del.quantity cm3/		: 1,2...2,2
	100 s:	(-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Del.quantity : 57,4...58,4  
 1000 : (57,0...62,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 7,80  
 Speed rpm : 950  
 2nd rack travel in: 3,10  
 Speed rpm : 1005...1035  
 4th rack travel in: 1150  
 Speed rpm : 0,30...1,00

## LOW IDLE 1

Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 19,00

Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,10  
Speed rpm : 390...410  
Speed rpm : 550  
Maximum rack travel: 1,00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12,50...13,00

#### HIGH IDLE

1st version  
Speed rpm : 950  
Rack travel in mm : 4,00

Remarks:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 3,9 b  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 322  
 Injection pump  
 Pump designation : PES4A85D320RS2530  
 Governor  
 Governor design. : RSV250...900A1B2015R  
 Customer-spec. information  
 Customer : KIRLOSKAR  
 Engine : RDA 4

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.0  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter x Wall thickness x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm : 9,00		
Del.quantity cm3/ : 4,1...4,5		
100 s: (-)		
Spread	cm3	: 0,4
100 s: (-)		
2nd speed	rpm	: 200
Rack travel in mm : 9,00		
Del.quantity cm3/ : 1,4...2,4		
100 s: (-)		

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Del.quantity : 47,4...48,4  
 1000 : (45,4...50,4)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 7,80  
 Speed rpm : 935...965  
 3rd rack travel in: 1,70...4,50  
 Speed rpm : 1020  
 4th rack travel in: 1150  
 Speed rpm : 0,30...1,00

## LOW IDLE 1

Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 19,00

Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,10  
Speed rpm : 390...410  
Speed rpm : 550  
Maximum rack trave: 1,00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12,50...13,00

#### HIGH IDLE

1st version  
Speed rpm : <950  
Rack travel in mm : 4,00

Remarks:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 5,8 b  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 323

Injection pump  
 Pump designation : PES6A85D320RS2531  
 Governor  
 Governor design. : RSV250...900A1B2015R

Customer-spec. information  
 Customer : KIRLOSKAR

Engine : RDA 6

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm		: 9,00
Del.quantity cm³/		: 4,1...4,5
		100 s: (-)
Spread	cm³	: 0,4
		100 s: (-)
2nd speed	rpm	: 200
Rack travel in mm		: 9,00
Del.quantity cm³/		: 1,4...2,4
		100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position	Degree:	-3
Speed	rpm	: 800
Rack travel in mm		: 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version	Speed	rpm	: 900
	Del.quantity		: 47,4...48,4
	1000		: (45,4...50,4)

## RATED SPEED

1st version	Control lever	position degrees:	46...54
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Testing:  
 1st rack travel in: 7,80  
 Speed rpm : 935...965  
 3rd rack travel in: 1,70...4,50  
 Speed rpm : 1020  
 4th rack travel in: 1150  
 Speed rpm : 0,30...1,00

LOW IDLE 1  
 Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

Testing:  
 Speed rpm : 100  
 Minimum rack trave: 19,00

Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,10  
Speed rpm : 390...410  
Speed rpm : 550  
Maximum rack trave: 1,00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12,50...13,00

#### HIGH IDLE

1st version  
Speed rpm : <950  
Rack travel in mm : 4,00

Remarks:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 1,9 d  
 Edition : 21.07.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 350

Injection pump  
 Pump designation : PES2A85D320RS2528  
 Governor  
 Governor design. : RSV250...950A7B2029R

Customer-spec. information  
 Customer : KIRLOSKAR

Engine : RD 2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Tolerance + -° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 6,00  
 -----  
 Del.quantity cm<sup>3</sup>/ : 0,45...1,45

M04

100 s: (-)

Spread cm<sup>3</sup> : 0,40

100 s: (-)

2nd speed rpm : 200  
 Rack travel in mm : 9,00  
 Del.quantity cm<sup>3</sup>/ : 1,25...2,25  
 100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 730  
 Del.quantity : 54,5...55,5  
 1000 : (53,5...56,5)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

## Testing:

1st rack travel in: 16,00  
 Speed rpm : 740...760  
 2nd rack travel in: 11,60  
 Speed rpm : 770...790  
 3rd rack travel in: 6,10...6,30  
 Speed rpm : 810

## LOW IDLE 1

Control lever  
 position degrees: 8...16  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 17,00  
 Speed rpm : 200  
 Rack travel in mm : 5,80...6,20  
 Rack travel in mm : 4,20  
 Speed rpm : 290...310  
 Speed rpm : 500  
 Maximum rack trave: 1,00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: ?

Speed rpm : 920...950

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 12,50...13,00

Remarks:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 3,9 a 1  
 Edition : 31.07.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 352

Injection pump  
 Pump designation : PES4A85D320RS2530  
 Governor  
 Governor design. : RSV250...950A7B2059D  
 R

## Customer-spec. information

Customer : KIRLOSKAR

Engine : RD 4

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38..42

Inlet press., bar : 1.0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

M06

1st speed rpm : 1000  
 Rack travel in mm : 6,00  
 Del.quantity cm<sup>3</sup>/ : 0,45...1,45  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0,4  
 100 s: (-)  
 2nd speed rpm : 200  
 Rack travel in mm : 9,00  
 Del.quantity cm<sup>3</sup>/ : 1,25...2,25  
 100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 730  
 Del.quantity : 54,5...55,5  
 1000 : (53,5...56,5)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:  
 1st rack travel in: 16,00  
 Speed rpm : 740...760  
 2nd rack travel in: 11,60  
 Speed rpm : 770...790  
 3rd rack travel in: 6,20  
 Speed rpm : 795...825

## LOW IDLE 1

Control lever  
 position degrees: 8...16  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 17,00  
 Speed rpm : 200  
 Rack travel in mm : 5,80...6,20

Rack travel in mm : 4.20  
Speed rpm : 290...310  
Speed rpm : 500  
Maximum rack travel: 1,00

#### BREAKAWAY

1st version  
Speed rpm : 920...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12,50...13,00

Remarks:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 5,8 a 1  
 Edition : 28.07.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 353

Injection pump  
 Pump designation : PES6A85D320RS2531  
 Governor  
 Governor design. : RSV250...950A7B2059R

Customer-spec. information  
 Customer : KIRLOSKAR

Engine : RD 6

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Inlet press., bar : 1.0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm : 1000
Rack travel in mm	: 9,00
Del.quantity cm3/l	: 3,95...4,55
	100 s: (-)
Spread	cm3 : 0,4
	100 s: (-)
2nd speed	rpm : 200
Rack travel in mm	: 9,00
Del.quantity cm3/l	: 1,25...2,25
	100 s: (-)

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version	Speed rpm : 900
Del.quantity	: 58,5...59,5
	1000 : (56,5...61,5)

## RATED SPEED

1st version	Control lever
	position degrees: 51...59

Testing:  
 1st rack travel in: 14,50  
 Speed rpm : 900...920  
 2nd rack travel in: 2,90  
 Speed rpm : 985...1015  
 4th rack travel in: 1080  
 Speed rpm : 0,30...1,00

LOW IDLE 1  
 Control lever  
 position degrees: 8...16  
 Setting point w/out bumper spring  
 Speed rpm : 250  
 Rack travel in mm : 6,00

Testing:  
 Speed rpm : 100  
 Minimum rack trave: 17,00  
 Speed rpm : 250  
 Rack travel in mm : 5,80...6,20  
 Rack travel in mm : 4,20

Speed rpm : 290...310  
Speed rpm : 500  
Maximum rack trave: 1,00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 920...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12.50...13.00

Remarks:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 1,9 a  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 354

Injection pump  
 Pump designation : PES2A85D320RS2528  
 Governor  
 Governor design. : RSV250...1200A1B2058  
 DR

Customer-spec. information  
 Customer : KIRLOSKAR  
 Engine : RDA 2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-2

Phasing : 0-90  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm : 9,00		
Del.quantity cm <sup>3</sup> /		: 4,1...4,7
100 s: (-)		
Spread	cm <sup>3</sup>	: 0,4
100 s: (-)		
2nd speed	rpm	: 200
Rack travel in mm : 9,00		
Del.quantity cm <sup>3</sup> /		: 1,3...2,3
100 s: (-)		

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 57,0...58,0  
 1000 : (55,0...60,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 60...68

Testing:  
 1st rack travel in: 9,00  
 Speed rpm : 1250...1260  
 2nd rack travel in: 5,50  
 Speed rpm : 1275...1305  
 4th rack travel in: 1400  
 Speed rpm : 0,30...1,70

LOW IDLE 1  
 Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 4,25  
Speed rpm : 290...310  
Speed rpm : 500  
Maximum rack trave: 1,000

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9,00  
2nd speed rpm : 750  
Rack travel in m: 10,20...10,60  
3rd speed rpm : 500  
Rack travel in m: 10,80...11,30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ 1000 s: 54,6...58,4  
1000 s: (53,0...60,0)  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ 1000 s: 54,6...58,4  
1000 s: (53,0...60,0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 1250...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12,50...13,00

#### HIGH IDLE

1st version  
Speed rpm : 1275  
Rack travel in mm : 5,50

Remarks:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 2,9 a  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 355  
 Injection pump  
 Pump designation : PES3A85D320RS2529  
 Governor  
 Governor design. : RSV250...1200A1B2058  
 DR  
 Customer-spec. information  
 Customer : KIRLOSKAR  
 Engine : RDA 3

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.5  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-2

Phasing : 0-120-240  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 9,00  
 Del.quantity cm<sup>3</sup>/ : 4,1...4,7  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0,4  
 100 s: (-)  
 2nd speed rpm : 200  
 Rack travel in mm : 9,00  
 Del.quantity cm<sup>3</sup>/ : 1,3...2,3  
 100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 57,0...58,0  
 1000 : (55,0...60,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 60...68

Testing:  
 1st rack travel in: 9,00  
 Speed rpm : 1250...1260  
 2nd rack travel in: 5,50  
 Speed rpm : 1275...1305  
 4th rack travel in: 1400  
 Speed rpm : 0,30...1,70

LOW IDLE 1  
 Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 4,25  
Speed rpm : 290...310  
Speed rpm : 500  
Maximum rack trave: 1,00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9,00  
2nd speed rpm : 750  
Rack travel in m: 10,20...10,60  
3rd speed rpm : 500  
Rack travel in m: 10,80...11,30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 54,6...58,4  
1000 s: (53,0...60,0)  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 54,6...58,4  
1000 s: (53,0...60,0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 1250...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12,50...13,00

#### HIGH IDLE

1st version  
Speed rpm : 1275  
Rack travel in mm : 5,50

Remarks:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 3,9 a  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 356

Injection pump  
 Pump designation : PES4A85D320RS2530  
 Governor  
 Governor design. : RSV250...1200A1B2058  
 DR

Customer-spec. information  
 Customer : KIRLOSKAR  
 Engine : RDA 4

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del. quantity cm<sup>3</sup>/ : 4,1...4,7

100 s: (-)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 200

Rack travel in mm : 9,00

Del. quantity cm<sup>3</sup>/ : 1,3...2,3

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 57,0...58,0  
 1000 : (55,0...60,0)

## RATED SPEED

1st version

Control lever

position degrees: 60...68

## Testing:

1st rack travel in: 9,00

Speed rpm : 1250...1260

2nd rack travel in: 5,50

Speed rpm : 1275...1305

4th rack travel in: 1400

Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 4,25  
Speed rpm : 290...310  
Speed rpm : 500  
Maximum rack trave: 1,00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9,00  
2nd speed rpm : 750  
Rack travel in m: 10,20...10,60  
3rd speed rpm : 500  
Rack travel in m: 10,80...11,30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 54,6...58,4  
1000 s: (53,0...60,0)  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 54,6...58,4  
1000 s: (53,0...60,0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 1250...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12,50...13,00

#### HIGH IDLE

1st version  
Speed rpm : 1275  
Rack travel in mm : 5,50

Remarks:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 5,8 a  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 357  
 Injection pump  
 Pump designation : PES4A85D320RS2531  
 Governor  
 Governor design. : RSV250...1200A1B2058  
 DR  
 Customer-spec. information  
 Customer : KIRLOSKAR  
 Engine : RDA 6

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.5  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
-----		
Rack travel in mm	: 9,00	
-----		
Del.quantity cm <sup>3</sup> /	: 4,1...4,7	
-----		
100 s:	(-)	
-----		
Spread	cm <sup>3</sup>	: 0,4
-----		
100 s:	(-)	
-----		
2nd speed	rpm	: 200
Rack travel in mm	: 9,00	
Del.quantity cm <sup>3</sup> /	: 1,3...2,3	
100 s:	(-)	

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del.quantity : 57,0...58,0  
 1000 : (55,0...60,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 60...68

## Testing:

1st rack travel in: 9,00  
 Speed rpm : 1250...1260  
 2nd rack travel in: 5,50  
 Speed rpm : 1275...1305  
 4th rack travel in: 1400  
 Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever  
 position degrees: 18...26  
 Setting point w/out bumper spring  
 Speed rpm : 200  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 200  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 4,25  
Speed rpm : 290...310  
Speed rpm : 500  
Maximum rack trave: 1,00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9,00  
2nd speed rpm : 750  
Rack travel in m: 10,20...10,60  
3rd speed rpm : 500  
Rack travel in m: 10,80...11,30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 54,6...58,4  
1000 s: (53,0...60,0)  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 54,6...58,4  
1000 s: (53,0...60,0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 1250...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 12,50...13,00

#### HIGH IDLE

1st version  
Speed rpm : 1275  
Rack travel in mm : 5,50

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : TAT 5,7 b  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 428

Injection pump  
 Pump designation : PES6A90D410RS2574  
 Governor  
 Governor design. : RQV300...1400AB109SL

Customer-spec. information  
 Customer : TATA

Engine : 697 D

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm<sup>3</sup>/ : 4,9...5,2

100 s: (-)

Spread cm<sup>3</sup> : 0,3

100 s: (-)

2nd speed rpm : 200

Rack travel in mm : 9,00

Del.quantity cm<sup>3</sup>/ : 2,0...2,9

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 64,0...65,0

1000 : (62,0...67,0)

## RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 8,70

Speed rpm : 1440...1470

2nd rack travel in: 4,00

Speed rpm : 1550...1585

3rd rack travel in: 2,00

Speed rpm : 1595...1630

## LOW IDLE 1

Control lever

position degrees: 11...19

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5,90...6,00

Testing:

Speed rpm : 100

Minimum rack trave: 7,00

Speed rpm : 450  
Rack travel in mm : 3,00...4,20  
Speed rpm : 760  
Maximum rack travel: 1,00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,70  
Speed rpm : 1460...1470

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 13,70...14,30

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 u  
 Edition : 23.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 432  
 Injection pump  
 Pump designation : PES6A80D410RS1334  
 Governor  
 Governor design. : RSV325...1150A8B2134  
 L  
 Customer-spec. information  
 Customer : KHD  
 Engine : F6L 912

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.0  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Prestroke mm : 1,90...2,00  
 : (1,85...2,05)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
-----		
Rack travel in mm	: 9,00	
-----		
Del.quantity cm <sup>3</sup> /	: 4,40...4,60	
-----		
100 s:	(-)	
-----		
Spread	cm <sup>3</sup>	: 0,3
-----		
100 s:	(-)	
-----		
2nd speed	rpm	: 200
Rack travel in mm	: 6,00	
Del.quantity cm <sup>3</sup> /	: 0,2...0,8	
100 s: (-)		

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del.quantity : 52,4...55,4  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:  
 1st rack travel in: 8,00  
 Speed rpm : 1190...1200  
 2nd rack travel in: 5,50  
 Speed rpm : 1220...1240  
 4th rack travel in: 1450  
 Speed rpm : 0,30...1,70

LOW IDLE 1  
 Control lever  
 position degrees: 17...25  
 Setting point w/out bumper spring  
 Speed rpm : 325  
 Rack travel in mm : 6,00

Testing:

Speed rpm : 200  
Minimum rack trave: 19,00  
Speed rpm : 325  
Rack travel in mm : 5,80...6,20

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150  
Rack travel in m: 9,00  
2nd speed rpm : 900  
Rack travel in m: 9,70...9,90  
3rd speed rpm : 750  
Rack travel in m: 10,30  
4th speed rpm : 600  
Rack travel in m: 10,70...10,90

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ 1000 s: 52,4...55,4  
1000 s: (49,4...58,4)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8,00  
Speed rpm : 1190...1200

#### HIGH IDLE

1st version

Speed rpm : 1230  
Rack travel in mm : 5,50

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : YDA 4,9 b  
 Edition : 09.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 442  
 Injection pump  
 Pump designation : PES4A90D310/3LS2630  
 Governor  
 Governor design. : RSV250...750A7B685L

Customer-spec. information  
 Customer : RUSTON & HORNSBY  
 Engine : 4 YDAX

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm : 9,00		
Del.quantity cm <sup>3</sup> : 6,0...6,5		
100 s: (-)		
Spread	cm <sup>3</sup>	: 0,4
100 s: (-)		
2nd speed	rpm	: 200
Rack travel in mm : 6,00		
Del.quantity cm <sup>3</sup> : 3,3...4,5		
100 s: (-)		

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 730  
 Del.quantity : 97,6...98,8  
 1000 : (94,6...100,8)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:  
 1st rack travel in: 11,00  
 Speed rpm : 760...765  
 2nd rack travel in: 5,50  
 Speed rpm : <785  
 4th rack travel in: 950  
 Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever  
 position degrees: 10...18  
 Setting point w/out bumper spring  
 Speed rpm : 250  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 17,00

Speed rpm : 250  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,00  
Speed rpm : 425...475

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 760...765

#### HIGH IDLE

1st version  
Speed rpm : <800  
Rack travel in mm : 5,50

Remarks:

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : YDA 7,3 c  
 Edition : 09.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 443

Injection pump  
 Pump designation : PES6A90D310/3LS2631  
 Governor  
 Governor design. : RSV250...750A7B685L

Customer-spec. information  
 Customer : RUSTON & HORNSBY  
 Engine : 6 YDAX

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm		: 9,00
Del.quantity cm <sup>3</sup> /		: 6,0...6,5
	100 s:	(-)
Spread	cm <sup>3</sup>	: 0,4
	100 s:	(-)
2nd speed	rpm	: 200
Rack travel in mm		: 6,00
Del.quantity cm <sup>3</sup> /		: 3,3...4,5
	100 s:	(-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70  
 Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 730  
 Del.quantity : 97,6...98,8  
 1000 : (94,6...100,8)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:  
 1st rack travel in: 11,00  
 Speed rpm : 760...765  
 2nd rack travel in: 5,50  
 Speed rpm : <785  
 4th rack travel in: 950  
 Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever  
 position degrees: 10...18  
 Setting point w/out bumper spring  
 Speed rpm : 250  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 17,00

Speed rpm : 250  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,00  
Speed rpm : 425...475

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 760...765

#### HIGH IDLE

1st version  
Speed rpm : <800  
Rack travel in mm : 5,50

Remarks:

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : YDA 4,9 a  
 Edition : 08.08.89

Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 451

Injection pump  
 Pump designation : PES6A95D310/3LS2636  
 Governor  
 Governor design. : RSV250...900A7B685L

Customer-spec. information  
 Customer : RUSTON & HORNSBY

Engine : 6 YDX MK 2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00

Del.quantity cm<sup>3</sup>/ : 6,2...7,7

100 s: (-)

Spread cm<sup>3</sup> : 0,4

100 s: (-)

2nd speed rpm : 200

Rack travel in mm : 6,00

Del.quantity cm<sup>3</sup>/ : 0,4...1,5

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 121,0...123,0

1000 : (119,0...125,0)

## RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11,0

Speed rpm : 760...765

2nd rack travel in: 5,50

Speed rpm : <790

4th rack travel in: 930

Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever

position degrees: 8...16

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6,00

Testing:

Speed rpm : 100

Minimum rack trave: 17,00

Speed rpm : 250  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,00  
Speed rpm : 420...470

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 760...765

#### HIGH IDLE

1st version  
Speed rpm : <800  
Rack travel in mm : 5,50

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : YDA 4,9 a  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 030 452

Injection pump  
 Pump designation : PES4A95D310/3LS2635  
 Governor  
 Governor design. : RSV250...900A7B685L

Customer-spec. information  
 Customer : RUSTON & HORNSBY

Engine : 4 YDX MK 2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm		: 9,00
Del. quantity cm3/l		: 6,2...7,7
	100 s:	(-)
Spread	cm3	: 0,4
	100 s:	(-)
2nd speed	rpm	: 200
Rack travel in mm		: 6,00
Del. quantity cm3/l		: 0,4...1,5
	100 s:	(-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Del. quantity : 121,0...123,0  
 1000 : (119,0...125,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 38...46

Testing:  
 1st rack travel in: 11,0  
 Speed rpm : 760...765  
 2nd rack travel in: 5,50  
 Speed rpm : <790  
 4th rack travel in: 930  
 Speed rpm : 0,30...1,70

LOW IDLE 1  
 Control lever  
 position degrees: 8...16  
 Setting point w/out bumper spring  
 Speed rpm : 250  
 Rack travel in mm : 6,00

Testing:  
 Speed rpm : 100  
 Minimum rack trave: 17,00

Speed rpm : 250  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,00  
Speed rpm : 420...470

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 760...765

#### HIGH IDLE

1st version  
Speed rpm : <800  
Rack travel in mm : 5,50

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : TAT 5,7 a  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 465

Injection pump  
 Pump designation : PES6A90D410RS2657  
 Governor  
 Governor design. : RQV300...1400AB1095L

Customer-spec. information  
 Customer : TATA  
 Engine : 697 D

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
 : (2,10...2,30)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
-----		
Rack travel in mm	: 9,00	
-----		
Del.quantity cm3/l	: 4,9...5,2	
-----		
100 s:	(-)	
-----		
Spread	cm3	: 0,3
-----		
100 s:	(-)	
-----		
2nd speed	rpm	: 200
Rack travel in mm	: 9,00	
Del.quantity cm3/l	: 2,0...2,9	
100 s:	(-)	

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1400  
 Del.quantity : 64,0...65,0  
 1000 : (62,0...67,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 58...66

Testing:  
 1st rack travel in: 8,70  
 Speed rpm : 1440...1470  
 2nd rack travel in: 4,00  
 Speed rpm : 1550...1585  
 3rd rack travel in: 2,00  
 Speed rpm : 1595...1630

## LOW IDLE 1

Control lever  
 position degrees: 11...19  
 Setting point w/out bumper spring  
 Speed rpm : 300  
 Rack travel in mm : 5,95

## Testing:

Speed rpm : 100  
 Minimum rack trave: 7,00

Speed rpm : 450  
Rack travel in mm : 3,00...4,20  
Speed rpm : 760  
Maximum rack travel: 1,00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8,70  
Speed rpm : 1460...1470

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 13,70...14,30

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KIR 3,7 a  
 Edition : 08.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 030 488  
 Injection pump  
 Pump designation : PES4A80D410RS1319  
 Governor  
 Governor design. : RSV250...750A7B2191L

Customer-spec. information  
 Customer : KIRLOSKAR

Engine : HA 494

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.5

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Prestroke mm : 1,90...2,00  
 : (1,85...2,05)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed	rpm	: 1000
Rack travel in mm		: 9,00
Del.quantity cm <sup>3</sup> /		: 4,4...4,7
	100 s:	(-)
Spread	cm <sup>3</sup>	: 0,3
	100 s:	(-)
2nd speed	rpm	: 200
Rack travel in mm		: 6,00
Del.quantity cm <sup>3</sup> /		: 0,4...0,9
	100 s:	(-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 730  
 Del.quantity : 53,4...54,4  
 1000 : (52,0...56,0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 28...46

Testing:  
 1st rack travel in: 9,30  
 Speed rpm : 760...765  
 2nd rack travel in: 5,50  
 Speed rpm : <790  
 4th rack travel in: 950  
 Speed rpm : 0,3...1,7

## LOW IDLE 1

Control lever  
 position degrees: 10...18  
 Setting point w/out bumper spring  
 Speed rpm : 250  
 Rack travel in mm : 6,00

## Testing:

Speed rpm : 100  
 Minimum rack trave: 17,00

Speed rpm : 250  
Rack travel in mm : 5,80...6,20  
Rack travel in mm : 2,00  
Speed rpm : 320...370

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8,00  
Speed rpm : 760...765

#### HIGH IDLE

1st version  
Speed rpm : 805  
Rack travel in mm : 5,50

Remarks:

#### APPLICATION

Generator

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 3,9 a  
 Edition : 15.08.89  
 Replaces : 4.85  
 Test oil : ISO-4113

Combination no. : 9 400 085 240

Injection pump  
 Pump designation : PES4A90D320RS2702  
 EP type number : 9 400 083 095  
 Governor  
 Governor design. : RSV350...1150A2B2129  
 -4R  
 Governer no. : 9 420 083 193

Customer-spec. information  
 Customer : MWM

Engine : D 229-4

1st version kW : 75.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
 : (2.60...2.80)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.00...9.10

Del.quantity cm<sup>3</sup>/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever  
position degrees: 45...53

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

Testing:

1st rack travel in: 8.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

Remarks:  
: VALMET

APPLICATION

Tractor (tractor engines)

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.2

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 500  
Rack travel in m: 10.10...10.20  
3rd speed rpm : 800  
Rack travel in m: 9.70...9.90  
4th speed rpm : 1000  
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 61.0...63.0  
1000 s: (59.5...64.5)  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 66.0...68.0  
1000 s: (63.5...70.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 6,6 l  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 085 298

Injection pump  
 Pump designation : PES6A95D410RS2758  
 EP type number : 9 400 084 016  
 Governor  
 Governor design. : RQV350...1300AB1220-  
 3L  
 Governer no. : 9 420 080 253

## Customer-spec. information

Customer : FORD FNH

Engine : 6,6 L

1st version kW : 123.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

N08

Prestroke mm : 3.15...3.25  
 : (3.10...3.30)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.20...13.30

Del.quantity cm<sup>3</sup>/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.3

Del.quantity cm<sup>3</sup>/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 1335

travel mm : 8.00...8.10

2nd speed rpm : 350

travel mm : 1.20...1.60

3rd speed rpm : 500

travel mm : 2.90...3.30

4th speed rpm : 1000

travel mm : 5.30...5.70

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1530

Rack travel in mm : 8.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 98.0...100.0  
1000 : (96.0...102.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 112...120

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 1360...1370  
2nd rack travel in: 4.00  
Speed rpm : 1500...1530  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 67...75

#### Testing:

Speed rpm : 100  
Minimum rack trave: 10.00  
Speed rpm : 350  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.00  
Speed rpm : 680...740

#### CONSTANT REGULATION

Speed rpm : 370...440

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 353  
Rack travel in m: 11.20...11.30  
3rd pressure hPa : 473  
Rack travel in m: 12.40...12.80

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 87.0...91.0  
1000 s: (85.0...93.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 55.0...57.0  
1000 s: (53.0...59.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1360...1370

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.10...7.30  
Del.quantity cm<sup>3</sup>/ : 20.0...24.0  
1000 s: (17.5...26.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Set shutoff stop 1.5...2.0 mm before  
shutoff.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEZ 6,1 d  
 Edition : 02.05.89  
 Replaces : 1.9.88  
 Test oil : ISO-4113

Combination no. : 9 400 085 301

Injection pump  
 Pump designation : PES6A8SD410RS2415  
 EP type number : 0 410 886 907  
 Governor  
 Governor design. : RQV300...1325AB1234-  
 1L  
 Governer no. : 9 420 080 259

Customer-spec. information  
 Customer : DEUTZ ARGENTINA

Engine : BF 6L 913

1st version kW : 116.0  
 Rated speed : 2650

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm<sup>3</sup> : 0.2

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.3...2.1)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
 travel mm : 8.80...8.902nd speed rpm : 300  
 travel mm : 0.80...1.203rd speed rpm : 600  
 travel mm : 2.90...3.304th speed rpm : 900  
 travel mm : 4.80...5.205th speed rpm : 1200  
 travel mm : 6.80...7.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1325

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Del.quantity : 77.0...78.0

1000 : (75.0...80.0)

Spread      cm<sup>3</sup> : 2.00  
              1000 : (5.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

#### Testing:

1st rack travel in: 10.00  
Speed rpm : 1365...1375  
2nd rack travel in: 4.00  
Speed rpm : 1465...1485  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10

#### CONSTANT REGULATION

Speed rpm : 370...530

#### TORQUE CONTROL

Dimension a mm : 1.00  
Torque control curve - 1st version  
1st speed rpm : 1325  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 500  
Rack travel in m: 12.00...12.10  
3rd speed rpm : 800  
Rack travel in m: 11.80...12.10  
4th speed rpm : 1100  
Rack travel in m: 11.30...11.50

#### START CUT-OUT

Speed 1/min : 250 (270)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.0...76.0  
1000 s: (71.5...78.5)  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 77.5...79.5  
1000 s: (75.0...82.0)  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 78.0...80.0  
1000 s: (75.5...82.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1365...1375

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6.0 g  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 305

Injection pump  
 Pump designation : PES6A95D410RS2772  
 EP type number : 9 400 084 018  
 Governor  
 Governor design. : RQV300...1300AB1066-  
 6L  
 Governer no. : 9 420 080 265

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 366 A

1st version kW : 125.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.40...10.50

Del.quantity cm<sup>3</sup>/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 87.5...89.5

1000 : (85.5...91.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 55...63

### Testing:

1st rack travel in: 9.40  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1460...1490  
4th rack travel in: 1630  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 12...20

### Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10

## CONSTANT REGULATION

Speed rpm : 420...550

## TORQUE CONTROL

Dimension a mm : ?

### Torque control curve - 1st version

1st speed rpm : 1300  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 700  
Rack travel in m: 10.90...11.00  
4th speed rpm : 1000  
Rack travel in m: 10.60...10.80

## Aneroid/Altitude

### Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.90...11.00

## Measurement

Speed 1/min : 500

### 1st pressure hPa : -

Rack travel in m: 9.50...9.70  
2nd pressure hPa : 460  
Rack travel in m: 10.70...10.80  
3rd pressure hPa : 250  
Rack travel in m: 9.80...10.00

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ 1000 s: 86.5...89.5  
(84.0...92.0)

Aneroid pressure h: 700  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ 1000 s: 90.0...93.0  
(87.5...95.5)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ 1000 s: 60.5...62.5  
(58.5...64.5)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
Rack travel in mm : 13.90...14.10

### Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4.0 f  
 Edition : 15.08.89  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 9 400 085 307

Injection pump  
 Pump designation : PES4A95D410RS2774  
 EP type number : 9 400 084 019  
 Governor  
 Governor design. : RQV300...1300AB1228-  
 1L  
 Governer no. : 9 420 080 268

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 364 A

1st version KW : 85.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 38...42

Prestroke mm : 3.20...3.30  
 : (3.15...3.45)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.60...10.70

Del.quantity cm<sup>3</sup>/

100 s: (8.8...9.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

### Testing:

1st rack travel in: 9.60  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1470...1500  
4th rack travel in: 1640  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 12...20

### Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10

## CONSTANT REGULATION

Speed rpm : 420...550

## TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1300  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 700  
Rack travel in m: 11.20...11.30  
4th speed rpm : 1000  
Rack travel in m: 10.80...11.00

## Aneroid/Altitude

Compensator Test

### 1st version

Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.20...11.30

### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 460

Rack travel in m: 11.00...11.10

3rd pressure hPa : 370

Rack travel in m: 10.30...10.50

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ 1000 s: 92.0...95.0  
(89.5...97.5)

Aneroid pressure h: 700  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ 1000 s: 90.5...93.5  
(88.0...96.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ 1000 s: 67.0...69.0  
(65.0...71.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ 100.0...110.0  
Rack travel in mm : 13.90...14.10

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 g 1

Edition : 15.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 9 400 085 308

Injection pump

Pump designation : PES6A95D410RS2772

EP type number : 9 400 084 018

Governor

Governor design. : RQV300...1400AB1065-  
18L

Governor no. : 9 420 080 278

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 100.0

Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 6.8...7.0

100 s: (6.6...7.2)

Spread cm3 : 0.3

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.3

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.3

100 s: (0.3)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity 1000 : 68.0...70.0

1000 : (66.0...72.0)

Spread cm3 : 3.50

1000 : (3.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 55...63

### Testing:

1st rack travel in: 8.40  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1520...1550  
4th rack travel in: 1660  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 12...20

### Testing:

Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 7.10...7.30

## CONSTANT REGULATION

Speed rpm : 450...480

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 53.5...56.5  
1000 s: (51.0...59.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1440...1450

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
Rack travel in mm : 13.70...13.90

## Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6.0 g 2

Edition : 15.08.89

Replaces :

Test oil : ISO-4113

Combination no. : 9 400 085 310

## Injection pump

Pump designation : PES6A95D410RS2772

EP type number : 9 400 084 018

## Governor

Governor design. : RQV300...1300AB1066-  
8L

Governor no. : 9 420 080 279

## Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 366 LA

1st version kW : 155.0

Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.08)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 9.5...9.7

100 s: (9.3...9.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 95.0...97.0

1000 : (93.0...99.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 55...63

## Testing:

1st rack travel in: 10.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1470...1500  
4th rack travel in: 1640  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 12...20

## Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10

## CONSTANT REGULATION

Speed rpm : 420...550

## Aneroid/Altitude Compensator Test

### 1st version

Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.40...9.70

2nd pressure hPa : 450

Rack travel in m: 10.80...10.90

3rd pressure hPa : 250

Rack travel in m: 9.90...10.10

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 90.0...93.0  
1000 s: (87.5...95.5)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 60.5...62.5  
1000 s: (58.5...64.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1340...1350

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
Rack travel in mm : 13.90...14.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 q7  
 Edition : 21.05.87  
 Replaces : 5.85  
 Test oil : ISO-4113

Combination no. : 9 400 087 330

Injection pump  
 Pump designation : PE6P110A320RS3108  
 EP type number : 0 411 816 727  
 Governor  
 Governor design. : RQV250...1100PA589-1  
 Governer no. : 9 420 080 166

Customer-spec. information  
 Customer : VOLVO

Engine : THD100 ED

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.20

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm<sup>3</sup>/ : 3.2...3.6

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.20...1.40

2nd speed rpm : 500

travel mm : 4.10...4.80

3rd speed rpm : 700

travel mm : 6.40...6.60

4th speed rpm : 1000

travel mm : 6.40...6.60

5th speed rpm : 1100

travel mm : 7.10...7.40

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 750

Del.quantity : 158.0...160.0

1000 : (155.0...163.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:

1st rack travel in: 11.10  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 6...14

Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 345...405

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 750  
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.30...9.40  
2nd pressure hPa : 600  
Rack travel in m: 11.30...11.50  
3rd pressure hPa : 300  
Rack travel in m: 9.60...9.70

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 105.0...107.0  
1000 s: (102.0...110.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 7.0 d 2  
 Edition : 15.08.89  
 Replaces : 6.86  
 Test oil : ISO-4113

Combination no. : 9 400 087 340

Injection pump  
 Pump designation : PES4P100A720LS504  
 EP type number : 9 400 087 052  
 Governor  
 Governor design. : RQV350...1100PA798-3  
 Governer no. : 9 420 080 227

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DINA

1st version kW : 78.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.10...10.20

Del.quantity cm<sup>3</sup>/ : 8.9...9.0

100 s: (8.7...9.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.8...7.0

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed	rpm	: 1150
travel mm		: 8.50...8.60
2nd speed	rpm	: 350
travel mm		: 1.30...1.70
3rd speed	rpm	: 450
travel mm		: 3.20...3.50
4th speed	rpm	: 600
travel mm		: 4.40...4.70
5th speed	rpm	: 1000
travel mm		: 7.00...7.20

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 89.5...90.5  
1000 : (87.0...93.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 63...71

#### Testing:

1st rack travel in: 9.10  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 320...390

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 84.5...88.5  
1000 s: (82.5...90.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.10  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (161.0...189.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

#### Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 10.5 i  
 Edition : 15.08.89  
 Replaces : 8.1.88  
 Test oil : ISO-4113

Combination no. : 9 400 087 356

Injection pump  
 Pump designation : PES6P100A720LS511  
 EP type number : 9 400 087 059  
 Governor  
 Governor design. : RQV350/840...900PA83  
 9  
 Governer no. : 9 420 080 233

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DIT

1st version kW : 190.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 2...3

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/

100 s: (18.0...18.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/

100 s: (0.8...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed	rpm	: 950
	travel mm	: 8.50...8.60
2nd speed	rpm	: 350
	travel mm	: 0.50...1.50
3rd speed	rpm	: 500
	travel mm	: 2.40...2.60
4th speed	rpm	: 750
	travel mm	: 2.40...2.60
5th speed	rpm	: 850
	travel mm	: 4.00...4.50

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 925

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 182.5...184.5  
1000 : (180.0...187.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

Remarks:

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 11.80  
Speed rpm : 910...920  
2nd rack travel in: 4.00  
Speed rpm : 930...960  
4th rack travel in: 1050  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 350  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 770...830

#### START CUT-OUT

Speed 1/min : 290 (310)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 910...920

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)  
Rack travel in mm : 14.00...15.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.70...4.90

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 7,0 d 3  
 Edition : 15.08.89  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 9 400 087 395

Injection pump  
 Pump designation : PES4P100A720LS504  
 EP type number : 9 400 087 052  
 Governor  
 Governor design. : RQV350...1100PA798-3  
 Governer no. : 9 420 080 227

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3304 DINA

1st version kW : 78.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 214

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.10...10.20

Del.quantity cm<sup>3</sup>/

100 s: (8.7...9.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.8...7.0

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.70

3rd speed rpm : 450

travel mm : 3.20...3.50

4th speed rpm : 600

travel mm : 4.40...4.70

5th speed rpm : 1000

travel mm : 7.00...7.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 89.5...90.5  
1000 : (87.0...93.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 63...71

#### Testing:

1st rack travel in: 9.10  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 320...390

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 84.5...88.5  
1000 s: (82.5...90.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.10  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (161.0...189.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

#### Remarks:

: